A Dissertation on

"A COMPARATIVE ANALYSIS OF DEPRESSION, ANXIETY AND QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETES MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL HOSPITAL"

Submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

In partial fulfillment of the requirements

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M.D. (PSYCHIATRY)

(Branch-XVIII)

GOVERNMENT STANLEY MEDICAL COLLEGE & HOSPITAL
THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY,
CHENNAI, TAMILNADU.
APRIL 2015

CERTIFICATE

This is to certify that this dissertation entitled **"A COMPARATIVE ANALYSIS OF DEPRESSION, ANXIETY AND QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETES MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL "** submitted by **Dr. KUMAR . N.S** to the faculty of PSYCHIATRY, The Tamil Nadu Dr. M.G.R. Medical University, Chennai, in partial fulfillment of the requirements in the award of degree of M.D. (PSYCHIATRY)Branch -XVIII for the April 2015 examination is a bona-fide research work carried out by him during the period of July 2014 to September 2014 at Government Stanley Medical College & Hospital, Chennai, under our direct supervision and guidance of **Prof. Dr. T.V.ASOKAN M.D., DPM.**, Professor and Head of the department, Department of Psychiatry at Stanley Medical College, Chennai.

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This is to certify that this dissertation titled **"A COMPARATIVE ANALYSIS OF DEPRESSION, ANXIETY AND QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETES MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL"** submitted by **Dr. KUMAR.N.S** is an original work done in the Department of Psychiatry , Government Stanley Medical College and hospital , Chennai in partial fulfillment of regulations of The Tamil Nadu Dr. M.G.R. Medical University, for the award of degree of M.D. (PSYCHIATRY) Branch – XVIII , under my supervision during the academic period 2012-2015.

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DECLARATION

I, **Dr. KUMAR.N.S** solemnly declare that the dissertation on **"A COMPARATIVE ANALYSIS OF DEPRESSION, ANXIETY AND QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETES MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL"** is a bona- fide work done by me during the period of July 2014 to September 2014 at Government Stanley Medical College and Hospital, under the expert supervision of **Prof. Dr. T.V.ASOKAN , M.D, D.P.M.,** Professor and Head of Department Of Psychiatry, Government Stanley Medical College, Chennai.This thesis is submitted to The Tamil Nadu Dr .M.G.R. Medical University in partial fulfillment of the rules and regulations for the M.D. degree examinations in Psychiatry to be held in April 2015.

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A Dissertation on

“A COMPARATIVE ANALYSIS OF DEPRESSION, ANXIETYY AND QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETESS MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL.”

AIM : To compare the anxiety , depression , Quality of sexual function between cases(type 2 DM)) and controls (Non – diabetic individuals).

MATERIALS AND METHODS : M.I.N.I , Beck depression inventory(BDI) , Ham-A , Quality of sexual function scale(QSF).

PROCEDURE : Type 2 DM patients were recruited into the study based on inclusion and exclusion criteria and were compared with age, sex matched controls non diabetic individuals from medicine OPD. Participants were assessed with the above scales cross - sectionaly.

RESULTS : Prevalence of depression and anxiety was high in type 2 DM patients. Quality of sexual function is significantly impaired in type2 DM patients compared to controls.

CONCLUSION : Type 2 DM patients must need consultation liaison psychiatry to identify any psychiatric illness , to prevent or postpone their complications , since both mutually worsen each other .

INTRODUCTION

Diabetes mellitus is metabolic disease in which an increased level of blood glucose results, due to the alterations in the insulin secretion or by an impaired action of insulin or by the combined effects of the above mentioned. The various target end organs, especially the eyes, kidneys, nerves, heart, and blood vessels undergo damage, alteration in their functions, and may go for failure due to an increased blood glucose for a prolonged period of time (Chronic Hyperglycemia).

Long-term complications of diabetes include retinopathy (with potential loss of vision), nephropathy (leading to renal failure), peripheral neuropathy with risk of foot ulcers, with diabetes have an increased incidence of atherosclerotic cardio-vascular, peripheral vascular, and cerebro-vascular disease. Hypertension and lipoprotein metabolism abnormalities are frequently found in people with diabetes mellitus.

World Health Organization (WHO) estimated that the number of diabetic patients world-wide in 2000 was 171 million and which is expected to increase to 366 million by 2030. In addition to that, approximately 197 million people world – wide have impaired glucose tolerance (IGT), a pre-diabetic state; and it is expected to rise in amount to 420 million by 2025.[1]

The fact of great concern is that the highest increase in the number of people with diabetes is expected to increase by three-fold.

According to International Diabetes Federation (IDF), India has the largest number of diabetic patients Globally, and now, the number of diabetic patients in India are around 40.9 million and it is expected that, there will be 69.9 million diabetic population in India by 2025. (Diabetes Atlas – 6th edition).According to this data, India is the fast becoming the "diabetes capital of the world".

There is a certain exclusive clinical and biochemical abnormalities among Asians, especially among Indians which includes increased insulin - resistance, increased abdominal adiposity (i.e., elevated waist circumference even though low BMI (Body Mass Index), decreased adiponectin and increased level of of high sensitive C-reactive protein) : so called "Asian Indian Phenotype". This phenotype among Asian, especially Indians are more vulnerable to diabetes mellitus and earlier coronary arterial disease, also a part of this is may be due to genetic linkage. Moreover, the primary reason of the epidemic of diabetes mellitus is the rapid epidemiological changes like as modifications in life – style, rapid industrialization in the urban areas, which lead to modifications in dietary patterns and poor physical activity as evident from the increased occurrence of diabetes mellitus in the urban – population. (2)

Globally, the prevalence of diabetes was 4.7 per cent among the urban population when compared to the rural population was 2.0 per cent according to the American Diabetes Association (ADA) criteria , but according to the WHO criteria the prevalence of diabetes mellitus was 5.6 % among urban and 2.7 % among rural populations .(3)

In India, there has been consistent reports of differences in the prevalence of diabetes mellitus between urban and rural population. The ICMR study reported that the prevalence of diabetes in urban areas was 2.1 per cent and in rural areas was 1.5 per cent, where as an earlier study showed that the prevalence was 3 times higher in the urban areas (8.2%) when compared with the rural areas (2.4%). [4]

According to the WHO-ICMR national NCD (Non Communicable Diseases) risk factor surveillance at 2006, a surveillance was conducted in 5 States of India, in a different geographical locations (which includes northern, southern, eastern and western/central India) indicated that the Urban area had the higher prevalence (7.3%), followed by peri-urban/slum (3.2%) and rural areas (3.1%).[5]

In a study at Chennai, Chennai Urban Rural Epidemiology Study (CURES), the overall crude prevalence of diabetes mellitus using WHO criteria, was 15.5 % (age - standardized: 14.3%), while that of Impaired Glucose Tolerance was 10.6 % (age - standardized: 10.2%). The prevalence of diabetes mellitus in Chennai was increased by 39.8% (From 8.3% to 11.6%) in the period of 1989-1995, between period of 1995 - 2000 the prevalence rate increased to 16.3 % (From 11.6% to 13.5%), and between the period of 2000 - 2004, the prevalence rate further increased to 6.0% (From 13.5% to 14.3%). These results shows that in Chennai itself within the period of 14 years, the prevalence of diabetes mellitus increased markedly to 72.3%.[6]

Diabetes mellitus is a highly prevalent public health problem, and having reached an epidemic status worldwide. Diabetes mellitus contributes to a markedly increased morbidity and mortality in a large segment of people Globally, and mainly because of its extensive complications. In a study of Diabetes Attitudes, Wishes, and Needs (DAWN), surveyed over 4000 clinicians across 13 countries who treating diabetes mellitus patients, more than three – fourths of clinicians declared that the psychological problems – i.e; disorders (or) high levels of diabetes related distress, interfered with their patient's drug compliance.[7]

Diabetes and psychiatric morbidities such as depression, anxiety, and sexual dysfunctions are common, they are likely to co-exist, but importantly either one is known to worsen the other. Psychological stress after the diagnosis of diabetes may worsen hyperglycaemia, initiated by hypothalamo-pituitary-adrenal (HPA-Axis) axis.

Recent studies shows that the occurrence of depression and anxiety increased 3 times in diabetic patients when compare to the general population. Also, depression among the diabetes mellitus patients is strongly associated with higher levels of HbA1C with less active self – care leads to increased complications, mortality, and expenditures of health care. It is worthy to note that even relatively low levels of depression may be associated with these negative clinical out – comes. [8]

Identifying co-morbid psychiatric conditions like depression, anxiety and sexual dysfunction is essential to reduce the disability due to diabetes. However, it has been noted that in some situations psychiatric illnesses are under - recognized by physicians , because of a wrong consideration of psychiatric morbidities (Depression, Anxiety and sexual dysfunctions) as a‘normal consequences of difficult medical illnesses’-(Lustman et al).[9]

Nowadays, the co-morbidity of psychiatric illnesses with long- term physical illnesses like diabetes has emerged as a considerable attention to both clinical and policy issues. Diabetes is one of the most psychologically demanding illness, requires strict daily management by the patients themselves. Besides the stress of living with diabetes, diabetics also have to deal with the fear of complications secondary to diabetes, which lead to depression, anxiety and also affects the quality of sexual functions in both genders.

Chronic hyperglycaemia is known to induce worsening of sexual functions like decreased sexual desire, sexual aversion disorder, difficulty in erection, difficulty in achieving orgasm, and premature ejaculation in men. Prevalence of erectile dysfunction (ED) in men with diabetes increases with age and is about 35-70% overall.

In women with diabetes, sexual dysfunction is less common and usually undeclared, but there is an increased risk of vaginal dryness and arousal disorder.

I dentification and management of psychiatric co-morbidities like depression, anxiety and sexual dysfunction in diabetes patients may have a favourable outcome on good glycemic control and even prevent or postpone the diabetes related complications.

There is a marked difference in the prevalence of psychiatric co-morbidity between Type 1 and Type 2 diabetes mellitus, because of : (1) the age of onset in type 1 diabetic patients, is markedly different with type 2 diabetic patients:(2) the cause of depression in type 2 diabetes is also different from that in type 1 diabetes: (3) type 2 diabetes people are vulnerable to have co-morbid conditions, like obesity, hypertension - an another risk factors for depression: (4) the occurrence of complications in type 2 diabetes occurs earlier than to type 1 diabetes: (5) the treatment of both type 1 and type 2 diabetes mellitus are different and developing a different psychological burdens. So, type 1 and type 2 diabetes mellitus and it's complications never to be comparable.

Diabetes and its both micro – vascular and macro – vascular complications like diabetic retinopathy, diabetic autonomic neuropathy, diabetic nephropathy, diabetic neuropathy, cardiovascular complications, hypertension, and lipid abnormalities are themselves as a risk factors for depression and anxiety. So, thorough clinical evaluation done to avoid confounding factors to assess depression and anxiety in this study. Also a thorough clinical evaluation of medications that affect the quality of sexual functions was done to avoid confounding factors to assess the quality of sexual functions in type 2 diabetes mellitus patients. So, it is necessary to study a comparative analysis of psychiatric co- morbidities like depression, anxiety, and quality of sexual functions in type 2 diabetes mellitus patients to an age matched non – diabetic individuals in elaborately.

REVIEW OF LITERATURE

DEPRESSION: A VIGNETTE

According to ICD – 10, an individual is said to be in depression either mild, moderate or severe who usually suffers with typical symptoms of depressed mood, loss of interest and decreased energy that may lead to increased fatigability and decreased activity.

The various other symptoms are

(1) Decreased attention and concentration,

(2) Decreased self – esteem and self – confidence,

(3) Guilty feelings and worthlessness

(4) Negative view about the future,

(5) Self – harm or suicidal thoughts,

(6) Sleep disturbances,

(7) Lack of appetite.

Depression can be categorized in to mild, moderate and severe, according to the number of typical symptoms and the various other symptoms. For the diagnosis of depression, these symptoms should persists for about 2 weeks and cause significant impairment in social and occupational functioning.

Depression can occur alone or as a part of Bipolar disorder. If it occurs alone, then it is known as Unipolar depression. Depression is more among in women than men with the ratio of 2 : 1.At least 25 % of the patients had one or more precipitating events.There is also a diurnal variation in the symptoms : the symptoms worse in the morning. Approximately 75% of depressed patients experienced sleep disturbances,

either insomnia or hypersomnia. About 60 % of the depressed patients have suicidal ideation and 15% commit suicide.

DEPRESSION IN DIABETES MELLITUS PATIENTS

CAUSES OF DEPRESSION IN DIABETES MELLITUS

According to Lustman P J Griffith *et al* ,[10] various hypotheses have been proposed to understand the relationship between diabetes mellitus and depression.

1. Depression may occur as a result of psycho social stressors caused by diabetes mellitus.
2. Depression may occur as a result of biochemical changes related to diabetes mellitus and its treatment, since diabetes mellitus and depression are parts of a common set of metabolic disorders.
3. The chronic course of diabetes and the stress caused by it and the duration of the diabetes mellitus and its complications may affect the quality of life significantly.
4. An abnormal production of cortisol was demonstrated with both in diabetes mellitus and depression, since in both conditions there is an altered functions of hypothalamo – pituitary – adrenocortical (HPA) axis.
5. In diabetes mellitus patients, there is a frequent changes in blood glucose

level either hyperglycemia or hypoglycemia. These shift in blood glucose level also influences the shift in mood: present as euphoria, depression or dysphoria. Presence of poor glycemic control in long term lead to a high risk of affective disorders.

6. Both diabetes mellitus and depression are prevalent independently, but also both may exist together accidently.

PSYCHO SOCIAL THEORY:

Psycho analytic view:

According to Sigmund Freud, if an object is lost or perceived as lost, there is an internalized ambivalence occurred towards the loved object or person which can produce a form of pathological mourning may expressed as guilty feelings worthlessness and suicidal ideation. The symbolic or a real loss of loved object is perceived as rejection. In diabetes mellitus patients, the symbolic loss may be an altered body image, limitations in social functioning and a strict diet restrictions: which may be a key tool in the occurrence of depression.

Other Psycho Dynamic view:

Introjection play as an important key tool in the causation of depression in diabetes mellitus patients, since lost object viewed ambivalently by introjection: which lead to an inner sense of guilt, conflict, rage, pain and loathing in depression.

LEARNED HELPLESSNESS THEORY:

Martin Seligman advocated this learned helplessness model in the causation of depression. This theory is derived from the observed behavior of animals experimentally given un – expected random electric shocks, from which they learned to cannot escape.

This theory attributes that a person with inability to control the events, learned to a behavioral passivity like a sense of powerless and helpless. In diabetes mellitus patients, control of blood sugar is beyond their intentions, and they should be in surrender to medical treatment and on dependent to seeking medical consultations periodically. This will lead to a causation of depression in diabetes mellitus patients.

BEHAVIORAL THEORY:

Lewinshon postulated that, if the reinforcement from the environment is low, it will precipitate depression in an individual. In a diabetic individual, the reinforcements like pleasurable activities and social interactions were low, this in turn lead to them in depression.

COGNITVE THEORY:

Cognitive triad postulated by Aaron Beck are (i) Negative view of self, (ii) Negative interpretation of the environment and (iii) Negative view of future. According to Aaron Beck, cognitive distortions lead to a mal – adaptive thinking without an individual's conscious awareness.

IMMUNOLOGICAL THEORY:

Herbet *et al* [11] postulated that the immunological abnormalities caused by depression may be associated with the causation of diabetes mellitus. Depression is associated with several immunological abnormalities. There is an elevated serum concentrations of the cytokines (Interleukin 1 and Interleukin 6), Also there is an increased acute - phase proteins like CRP, haptoglobulin and an alpha 1 – acid glycol - proteins. These immunological abnormalities play a vital role in the causation of diabetes mellitus.

STRESS AND IMMUNE RESPONSE THEORY:

Diabetic patients are living with various psychological stresses like life long medications, life – style modifications and strict diet restrictions. These psychological has been associated with impaired cellular immunity. Also stress induces pro – inflammatory cytokines, as evidenced by administration of cytokines in clinical trials has been associated with the development of depressive syndrome; (Sickness Behavior).

NEURO – HORMONAL THEORY:

According to Hans Selye, an elevated HPA activity is the hall – mark of mammalian stress responses, and have a clear – cut linkage with depression and the biology of chronic stress. Hyper cotisolemia in depression may lead to decreased Serotonin inhibitory tone, increased Nor – epinephrine, Acetyl – choline and Corticotropin Releasing Hormone (CRH) tone. Also there is a decreased feedback inhibition from Hippocampus.

According to Lustman *et al*,[12] hyperglycemia is associated with elevated plasma cortisol level, which in turn lead to initiation of mood changes.Earlier Ettigi *et al* proposed that an abnormal levels of plasma cortisol in depressed diabetic patients.

Dinan *et al* proposed that in diabetes mellitus patients, there is a common occurrence of dysregulation in the neurotransmitters due to elevated HPA activity.

Cameron *et al* postulated that, there is a common neuro - endocrine basis for both depression and diabetes mellitus, as evidenced by an insulin resistance reported in both conditions.

Lustman PJ *et al*,[13] Hudson *et al* proposed that, an abnormal response to dexamethasone suppression test : failure to suppress cotisol in response to dexamethasone is observed in both depression as well as in diabetes

mellitus.

Neuro – transmitters especially serotonin and nor – epinephrine dysregulation has been an etiology of depression. The same dysregulations are noticed in animal models of diabetes mellitus, demonstrated by Trulson *et al*. Govard *et al* postulated that anti depressants reduce hyperglycemia and insulin requirement in diabetes mellitus patients.Cooper *et al* proposed that, an association between hypoglycemia with the use of mono amine oxidase inhibitors in Type 2 Diabetes mellitus patients.Lustman *et al* [14] demonsrated an increased Epinephrine growth hormone levels observed in both depression and diabetes mellitus.

Eaton *et al* demonstrated the connection between long term medical management, dietary restrictions and changes in physical activities observed in both diabetes mellitus and depression.

GENETIC FACTORS:

Lustman *et al*,[15] postulated that a genetic linkage have been noticed with increased prevalence of depression in diabetic individuals, also found that the genetics of patients with depression and diabetes mellitus tend to be similar.

Gene mapping studies in an unipolar depression found that, there is a strong evidence of linkage to the locus for CREB1 (c Amp Response Element – Binding protein) on chromosome 2.

The chromosomal region at $2q^{37}$ was the first locus to be identified as being significantly linked with type 2 diabetes mellitus in a whole – genome screen.

Hanish *et al* [16] proposed the linkage region of type 2 diabetes mellitus in Mexican – American population were $2q^{37}$, $15q^{21}$, $3p^{14}$.

Maleki *et al* [17] proposed that, the chromosomal region $2q^{32}$ undergo gene mutation: neuro D1/BETA2, genes found to be mutated in Autosomal Dominant Diabetes or Maturity – Onset – Diabetes of the Young (MODY).

Various data suggest that, the chromosomal regions like chromosome 18, 21, and 22 have the strong association with the Bipolar Affective Disorders. There are four different loci on the chromosome 18, preferentially at the locus of 18q has a possible parent - of – origin effect: transmitted through the mother.

The chromosome 21q shows linkage to both Schizophrenia and Bipolar Affective Disorder.

The chromosome 18q and 22q are the two regions with strongest evidence for linkage to Bipolar Disorder.

Parker *et al*,[18] demonstrated the chromosomal linkage region $18p^{11}$ has strong association with type 2 diabetes mellitus in a study on Scandinavian white population.

Linkage analysis suggest that, there is an association between the serotonin transporter gene ($17q^{11.1-12}$) with depression, treatment response and possibly suicidal behavior.

Horikawa *et al* [19] and Lindner *et al* demonstrated the chromosomal region $17q^{12}$-q^{21} undergo genetic mutation: HNF1β (MODY 5), results in mild to moderate diabetes, young age at diagnosis, non diabetic kidney disease and genital malformations.

LIFETIME PREVALENCE RATES OF DEPRESSIVE DISORDERS:

According to Rihmer Z, [20] Angst A *et al*, the lifetime prevalence rates depressive disorders in a general population are :

TYPE	RANGE	AVERAGE
Major depressive episode	5 -17%	12%
Dysthymic disorder	3 -6%	5%
Minor depressive disorder	10%	-
Recurrent brief depressive disorder	16%	-
Full unipolar spectrum	-	20 – 25%

PREVALENCE OF DEPRESSION IN TYPE 2 DIABETES MELLITUS CONTROLLED STUDIES:

Controlled studies which have used the control groups may allow us for better comparisons.In a meta – analysis study by Ali S *et al* ,[21]2006, 10 controlled studies were reviewed, which include 7 community based studies(Palinkar *et al*, [22]1991; Viinamaki *et al*, [23]1995, Amato *et al*,[24] 1996; Eaton *et al*,[25]1996; Black *et al*, [26]1999; Gregg *et al*, [27]2000; Pouwer *et al*, [28]2003), 2 primary care based studies (Janet Thomas *et al*,[29] 2003; Nicolas *et al*, [30]2003) and 1 secondary care based study (Saeed and Al-Dabbagh *et al*,[31] 2003).

Various assessment scales were used in these studies. BDI – Beck Depression Inventory, a self report questionnaire used in Palinkar *et al*, 1991, CES-D (Centre for Epidemiological Studies for Depression) Scale was used in Black *et al*, 1999; and Pouwer *et al*, 2003,

Zung depression scale was used in Viinamaki *et al*, 1995, and the Geriatric depression scale was used in Amato *et al*, 1996; and Gregg *et al*, 2000. Diagnostic Interview Schedule for DSM – IV was used in the studies of Thomas *et al*, 2003; Saeed and Al - Dabbagh *et al*, 2003; and in Eaton *et al*,1996.

This meta-analysis review results showed a higher prevalence of depression among type 2 diabetes mellitus patients when compare with non diabetic individuals. (Odds Ratio;1.77, 95% Confidence Interval; 1.5 – 2.0). These findings were consistent when the rates were determined by gender, sample source, depression assessment methods and by geographical location.

According to this meta-analysis, the overall prevalence of depression among type 2 diabetes patients was 17.6%, in which the female patients had a higher prevalence (23%) than male patients (12.8%).

Anne Engum *et al*, [32]2005, conducted a large population study and found that, the prevalence of depression among type 2 diabetic patients was 19% and in the non diabetic control groups the prevalence was 10%. Shamsaei[33] *et al*, 2006, conducted a study in Iran and found that mean Beck depression score among type 2 diabetic patients was higher (18.6) than the non diabetic control groups (9.1). Mary de Groot[34] *et al*, 2007, conducted a community based study in type 2 diabetes mellitus patients and revealed that 31% of the participants showed a clinically significant depression in Beck Depression Inventory Scale.

UNCONTROLLED STUDIES:

In a meta - analysis study of Anderson[35] *et al*, 2001; he reviewed 22 uncontrolled studies to estimate the prevalence of depression in diabetic patients. According to this study the overall prevalence of depression among diabetic patients was 29.7%. Among the 22 uncontrolled studies, 5 of them evaluated the prevalence of depression in type 2 diabetic patients (Biglan *et al*, Connell[36] *et al*, Geringer[37] *et al*, Marcus[38]*et al*, and Nalibott[39] *et al* which showed that the prevalence of depression in type 2 diabetic patients washigher (Mean: 33.8%, Range: 18.8% - 47%) than the type 1 diabetic patients (Mean: 21.2%, Range: 11.5% - 42.4%).

Among the 22 uncontrolled studies, 5 of them estimated the prevalence of depression in male and female diabetic patients separately (Bailoy *et al*, Haire – Joshu *et al*, Naliboff *et al*, Peyrot[40] *et al*, and Slawson[41] *et al*) which showed that the prevalence of depression was greater in females (33%) than in males (20.7%).

In a recent study at Malaysia, Kurubaran Ganasegeran[42] *et al*, 2014, demonstrated the factors connected with depression and anxiety among type 2 diabetic patients. They conducted a descriptive cross – sectional study in a single centre and found that, among 169 type 2 diabetic patients (men, n=99; women, n=70), depression present in 68 patients (40.3%), and anxiety present in 53 patients (31.4%). Multivariate analysis of this study shows that, theage of onset, ethnicity, monthly income and the complications associated with diabetes were significantly influenced the causation of both depression and anxiety among the type 2 diabetic patients.

INDIAN STUDIES

Poongothai S[43], *et al*, and her colleagues at 2009; conducted a population based study to estimate the prevalence of depression in an urban south Indian population – Chennai Urban Rural Epidemiology Study (CURES). 26,001 individuals were recruited for this study, among this 25,455 individuals participated in this study in a response rate of 97.9%. Prevalence of depression was assessed by using Patient HealthQuestionnaire (PHQ) - 12: a self – reported questionnaire, and found that, the overall prevalence of depression was 15.1%, among this, the prevalence of depression was higher in females (16.3%) than in males (13.9%).

Chandran[44] *et al*, 2002 conducted a study, to estimate prevalence of depression among rural and low socio economic status women (359 participants) and found that overall prevalence of depression among them was 11%. Biswas[45] *et al*, 2009; conducted a door to door survey to estimate the prevalence of depression in an elderly individuals (204 participants) and found that the prevalence of depression among them was 31.5%

In a study of Amit Raval[46], *et al*, and his colleagues at Chandigarh, India; 2010, they conducted a study to estimate the prevalence and determinants of depression among type 2 diabetic patients and found that, among 300 type 2 diabetes mellitus patients (147 male patients and 153 female patients), 68 patients (23%) met the criteria for major depression, 54 patients (18%) for moderate depression and the remaining 178 patients (59%) had no clinically significant depression. They also found that the age of onset, duration of diabetes, obesity, glycemic control and the diabetic complications having an impact in the causation of depression in type 2 diabetic patients.

In a recent study of Nitin Joseph[47], Bhaskaran Unnikrishnan, Y.P.Ragavendhra Babu M, Shashidhar Kotian, and Maria Nelliyanil *et al*, 2013; they conducted a study to estimate the proportion and determinants of depression in type 2 diabetic patients in various tertiary care hospitals at Mangalore, South India. Among the 230 type 2 diabetic patients (119 male patients, 111 female patients), 71 patients (30.9%) met the criteria of moderate depression, 33 patients (14.3%) met the criteria of severe depression and the remaining126 patients did not have any clinically significant depression. They also found that, the older age, low socio economic status, female gender, unskilled & retired employment status, obesity, daily medications and the complications of diabetes, were markedly associated with the causation of depression in type 2 diabetic patients.

THE PREDICTIVE FACTORS:

The predictive factors (Psychosocial factors) play an important role in the etiology of depression in diabetic patients. Various studies demonstrated extensively about the causal relationship of depression in diabetic patients and the list of factors identified are:

Female Sex: - Nanjundappa G *et al*, 1986,
Nichols *et al*, 2003,
Goldney RD[48] *et al*, 2004, and
Shaban[49] *et al*, 2006.

Low Education: - Anne Ergum *et al*, 2005.

Lack of Social support: - De Groot[50] *et al*, 1999.

Duration of Diabetes: - Talbot[51] *et al*, 1999.

Un - employment: - Mary de Groot[52] *et al*, 2007.

Poor Glycemic control: - Lustman[53] PJ Anderson *et al*, 2001.

These studies indicated the consistent findings of; female sex, low socio economic status, low education, un-employment, lack of social support, uration of diabetes and the poor glycemic control have a significant association with depression in type 2 diabetic patients.

ANXIETY: A VIGNETTE

All of us have experienced the anxiety symptoms may be suffer from particular phobia, a little obsessive in certain things, but for a definite diagnosis, it should be clinically significant, must be severe enough to cause significant distress, and or it must be markedly interfere our day – to – day lives and socio occupational functioning.

Anxiety is a state which has many effects. It influences the cognition and produce the perceptual distortions. There is a difference between fear and anxiety. In fear, there is an appropriate response to a known threatening stimuli, where as in anxiety there is also a response to a threat which is not known, not certain or disagreeable.

Most of the symptoms of anxiety are dreadful which are accompanied with somatic complaints and autonomous nervous system hyperactivity such as tachycardia, palpitation, sweating, dry mouth, etc.,. Anxiety also accompanied with psychological symptoms such as feeling of dread, difficulty in concentration, insomnia, decreased libido, lump in the throat (Globus Hystericus) and stomach upset (Butter flies).

DSM-IV eliminated the term " Neurosis" in its diagnostic manual, but still it is retained in the ICD – 10, as Neurotic, stress related and somatoform disorders (F 40 – F 48).

It may be convenient to divide the anxiety and stress related disorders in to 3 categories, because of the acceptable quality of the symptoms in each category.

1.**The common neuroses:**

Anxiety / Panic disorders; e.g. Panic disorder,

Agoraphobia,

Generalized Anxiety Disorder,

Specific Phobia,

Social Phobia,

Hypochondriasis.

(Illness anxiety disorder in DSM 5)

Stress related disorders: e.g. Acute stress reactions,

Adjustment disorders,

Post Traumatic Stress Disorder (PTSD).

Obsessive compulsive disorders (Separate entity in DSM – 5)

2. **The Unusual Neuroses**: (i.e. out with ‘ normal’ experience)

Anxiety / Phobic disorders e.g. “ non – understandable” phobias (e.g. dirt, feathers), Dysmorphophobia.

Hysterical conversion disorder,

Dissociate /Depersonalization – Derealization disorders,

Somatoform disorders.

3. “**Culture specific” disorders:**

Chronic fatigue syndrome / Eating disorder,

Other “culture bound” disorders.

ANXIETY IN DIABETES MELLITUS

CAUSES OF ANXIETY:

Anxiety disorders are common and more prevalent in the general population. In a data derived from multiple community surveys, anxiety disorder having a lifetime prevalence of 14.6%. When compare to other mental disorders its prevalence is high; Schizophrenia (1 – 1.5%), Affective disorders (8.3%), and substance abuse disorders (16.4%).

Anxiety disorders may occur spontaneously or in association with chronic illnesses like Diabetes, Hypertension, Cancer, etc.,. The anxiety disorder in a diabetic patients have an exaggerated psychological reactions

(misinterpretation of bodily cues) which reflects as anxiety symptoms in an inappropriate manner as harmful, dreadful, and dangerous. This in turn lead to an increased anxiety and fear (Grigsby *et al*,2001).

PSYCHO PHYSIOLOGY OF ANXIETY

Anxiety is a normal and adaptive response to an unknown threat, which makes us for flight or fight. These flight or fight reactions are mediated by the interactions of both sympathetic and para - sympathetic divisions of the Autonomic Nervous System (ANS), which results in increase somatic and autonomic activity.

Anxiety is said to be an abnormal, when it is present in an excessive and inappropriate to the time and situation with regard to an unknown threat. Anxiety is said to be a pathological anxiety, when there is a strong subjective feelings accompanied with physiological activation, which lead to trembling, twitching, feeling shaky, muscle tension, shortness of breath, hyper ventilation, exaggerated startle reflex and also accompanied with autonomic hyperactivity features like flushing, tachycardia,palpitation,sweating, cold hands, diarrhea, dry mouth and urinary incontinence.

NEUROCHEMICAL BASIS OF ANXIETY

Alexander Neumeister proposed that, there is a specific neurochemicals i.e.neurotransmitters and neuropeptides in the brain involved in the initiation of fear and anxiety symptoms in response to a threat which is not known, not certain or disagreeable. During a stressful condition, either an acute

threatening situations or in a chronic stress like chronic illnesses, these neurochemicals released from the brain area and significantly alters the functions of that brain areas.

NEUROTRANSMITTERS:

There are three major neurotransmitters identified in association with anxiety on the basis of animal experiments and also with the drug response to the drug treatment. The major neurotransmitters are; Norepinephrine, Serotonin, and Gamma Amino Butyric Acid (GABA).

The long term symptoms of anxiety disorder experienced by the patient such as panic attacks, autonomic hyperactivity, increased startle reflex and insomnia are the characteristic of elevated Norepinephrine action. In general, the affected persons with anxiety may have a dysregulation of noradrenergic system.

Studies on primates showed that, stimulation of the Locus ceruleus produces a fear and anxiety responses in animals. An elevated levels of noradrenergic metabolite 3 – Methoxy – 4 – Hydroxy Phenyl Glycol (MHPG) is found in the cerebro spinal fluid (CSF), and in the urine of the patients with panic disorder, which is also confirmed the increased norepinephrine activity.

SEROTONIN:

Clinical studies on serotonin function in anxiety disorders have a variable results. One study found that there is a lower level of circulatory serotonin in a patients with panic disorder, when compare to a control group.In general, the anxiety affected persons may have a dysregulation of serotonergic system, which is evidenced by the drug response of SSRIs to a panic individual.

GABA:

GABA is an inhibitory neurotransmitter that inhibits the Central Nervous System (CNS) irritability and is present as wide spread throughout the brain. In anxiety disorder, there is a decreased levels of circulating GABA which in turn lead to CNS hyperactivity. The action of GABA in anxiety disorder is most intensely evidenced by the Benzodiazepines, which act on $GABA_A$ - receptor and enhance the GABA activity.Recent studies also suggests a role of neuropeptides (Substance – P, CRF, Cholecystokinin) and an aminoacid neurotransmitter Galanin are associated with the anxiety disorder.

HPA AXIS (Hypothalamo – Pituitary – Adrenal Axis):

There is an elevated synthesis and release of cortisol evidenced with many forms of psychological stress. Cortisol contributes to increased arousal, vigilance, memory formation and focused attention. Also, cortisol alters the immune mechanisms and it's responses. Cortisol has an important regulatory effects on prefrontal cortex, amygdale, and on the hippocampus. There is an

alteration in HPA –Axis function have been demonstrated in anxiety disorders like Post Traumatic Stress Disorder (PTSD).

CORTICOTROPIN RELEASING HORMONE (CRH):

The adaptive, behavioral, and psychological changes occur during stress are usually coordinated by CRH. It is one of the most important trigger for stress response. Stress induces increased levels of hypothalamic CRH, which in turn results in stimulation of HPA axis lead to excessive release of cortisol.

APLYSIA:

A nobel prize winner, Dr. Eric kandel demonstrated a neurotransmitter model for anxiety disorder. He conducted a study on a sea snail –*Aplysia Californica* and found the varied responses to dangerous stimuli, and also it responses even in the absence of stimuli by classical conditioning.

PSYCHO DYNAMIC MODEL:

According to Freud, unconscious impulses (i.e. Sex or Aggression) threaten to burst in to the consciousness and produce an anxiety. Anxiety is related to childhood fears of disintegration which derive from the fear of an actual loss or imagined loss of loved object or the fear of bodily harm (e.g. castration anxiety). Freud used the term *"Signal Anxiety"* - to describe anxiety which experienced unconsciously and use defense mechanisms to

deal with the threatening situation. For example; The various defense mechanisms used in the anxiety disorders are; In Phobia; Displacement, symbolization. Agoraphobia; Projection, Displacement. OCD; Isolation of the affect, Reaction formation, Undoing. Generalized anxiety; Regression. Panic; Regression. and in PTSD; Regression, Repression, Denial, and Undoing.

LEARNING THEORY

Anxiety may be learned through imitation and identification of anxiety patterns from their parents – Social Learning Theory. Anxiety is stimulated by a natural frightening stimulus like an accident, which lead to displacement or transference to another stimulus by a conditioning process, that produces a phobia to a new, different object or situation.

Continued or severe frustration or stress produces anxiety, then it become a conditioned response to other less severe frustrating, stressful situations. In diabetic patients, they have a faulty, distorted patterns of cognitive thinking which was learned from their parents which in turn lead to an anxiety.

GENETIC STUDIES:

Hereditary has been accepted as a predisposing factor in the development of anxiety disorders. Almost 50% of the panic disorder patients have at least one affected relative. Twin studies shows that, anxiety disorders are at least partially, genetically determined. About 5% of persons with high levels of anxiety have a polymorphic variant of genes that associated with the serotonin transporter metabolism.

In 2005, the nobel prize winner Dr. Eric Kandel found, a knocking out a gene in mice brain. That gene codes for *"Stathmin"* – a protein that is critical for the amygdale to form fear memories. The '*Stathmin*' knock out mice shows anxiety in lesser degree.

PREVALENCE OF ANXIETY DISORDERS IN DIABETES MELLITUS:

Most of the studies in Diabetes focus on the psychiatric disturbance of depression, where as only few studies demonstrated the anxiety disorders in Diabetes mellitus patients.

Kaufman[54] *et al*, Roy A *et al*, demonstrated that, the co - morbid Anxiety disorder with Diabetes lead to a symptom severity and persistence of symptoms and greatly impair the individual role in the social and occupational milieu.Most of the studies about anxiety in diabetic patients, estimated the prevalence of anxiety in both type 1 and type 2 diabetes mellitus (Lloyd[55] *et al*, 2000; Grigby[56] *et al*, 2002; Hermanns[57] *et al*, 2005;

Barker *et al*, 2008). Janet Thomas[58] *et al*, 2003, demonstrated the association of anxiety disorders in type 2 diabetes mellitus patients. In this study, a structured diagnostic interview method like DIS – DSM IV (Diagnostic Interview Schedule for DSM – IV) was used.

Various scales were utilized to assess the anxiety disorders in diabetic patients. HADS – (Hospital Anxiety and Depression Scale) was used in Shaban MC[59] *et al*,2006, Lloyd *et al*, 2000. Beck Anxiety Scale was used in Lloyd et al, 2003 study. In Harmanns *et al*,2005, State Trait Anxiety Inventory (STAI) and Composite International Diagnostic Interview(CIDI) were used to estimate the prevalence of anxiety among diabetic patients.

Grisby *et al*, 2001, conducted a systematic review on 18 studies regarding the prevalence of anxiety disorders in an adult population with diabetes. He found that, the symptoms of anxiety was present in about 40% of the diabetic patients. Also, he found that there is an significantly elevated anxiety symptoms present among female diabetic patients (55.3%) than the male diabetic patients (32.9%). Also, he found that there is an increased symptoms of anxiety present among type 2 diabetic patients (42.2%) than with type 1diabetic patients (41.3%). Among the 40% of diabetic patients presented with anxiety symptoms, while applying definite diagnostic criteria only 14% of the diabetic patients were qualified for the definite diagnosis of Anxiety disorders.

Barker *et al*, 2008, found that the overall life time prevalence of anxiety disorder among diabetic patients was 19.5%, when compare to the non – diabetic individuals(10.9%).

Harmanns[57] *et al*, 2005, carried out a study to estimate the prevalence of anxiety symptoms in a secondary care clinic and found that, 19.3% of the diabetic patients had anxiety symptoms and 5.9% of them were fulfilling the criteria of anxiety disorders.

Lloyd[55] *et al*, 2000, demonstrated that 28% of the participants had moderate to severe levels of anxiety or depression or both. Shaban *et al*, 2006, found that 36% of the study participants had anxiety symptoms, and also found that , there is an elevated severe anxiety symptoms present among female diabetic patients.

Janet Thomas[58] *et al*, 2003, conducted a comparative study in a primary care patients who were diagnosed as type 2 diabetes mellitus, to evaluate the 12 months prevalence of depression and anxiety. A Structured Diagnostic Interview for DSM – IV was used to assess the depression and anxiety and found that 11.7% of the T2DM patients had anxiety disorders and 13% of the T2DM patients had mixed anxiety and depression disorder. This study shows that, type 2 diabetes mellitus increases the probability of acquiring anxiety symptoms by an Odds ratio of 2.26. (1.28 – 4.01, p value;0.005).

In a recent study, Carlos Tovilla-Zarate [60], *et al*, and his colleagues at 2012, conducted a study to estimate the prevalence of anxiety and depression among T2DM patients in an outpatient setup in the Mexican population. Hamilton Anxiety Rating Scale was used to estimate the prevalence of anxiety and found that, among 820 participants, the prevalence of anxiety was 55.10% (95% CI;44.48 – 52.06) and also found that, occupation and

diabetic complication were the associating factor for anxiety in type 2 diabetic patients.

In a recent study at Malaysia, Kurubaran Ganasegeran[61] *et al*, 2014, demonstrated the factors connected with depression and anxiety among type 2 diabetic patients. They conducted a descriptive cross – sectional study in a single centre and found that, among 169 T2DM patients (men, n=99; women, n=70), anxiety present in 53 patients (31.4%).

Multivariate analysis of this study shows that, the age of onset, ethnicity, monthly income and the complications associated with diabetes mellitus were significantly associated with the causation of both depression and anxiety among the type 2 diabetic patients.

Khuwaja[62] AK, *et al* , and his colleagues at 2010, conducted a multi – centre study at Karachi, Pakistan, to evaluate the prevalence of anxiety and depression among T2DM patients and found that, among the 889 participants 57.9% of the type 2 diabetic patients had anxiety symptoms (95% CI = 54.7%, 61.2%).

THE PREDICTIVE FACTORS RELATED WITH ANXIETY IN TYPE 2 DIABETES MELLITUS

Various studies demonstrated the part of action as psychosocial factors in the causation of anxiety in type 2 diabetic patients. The predictive factors associated with anxiety in diabetes are,

Female Sex: - Grigsby *et al*, 2002,
Hermanns *et al*, 2005,
Shaban *et al*, 2006,
Fisher[63] *et al*, 2008.

Low Education: - Janet Thomas *et al*, 2003,

Younger Age: - Hermanns *et al*, 2004,
Baker *et al*, 2008,
Fisher *et al*, 2008,

Type 2 Diabetes: - Janet Thomas *et al*, 2003,
Hermanns *et al*, 2005,

Poor Metabolic control: - Kruse[64] J *et al*, 2003.

Various studies found that female sex as a significant predictive factor for anxiety, few studies like Janet Thomas *et al*, 2003, and Baker *et al*, 2008, failed to validate that finding.

These studies indicated the findings of; female sex, low socio economic status, low education, un-employment, lack of social support, duration of diabetes and the occupational stress have a significant association with anxiety in type 2 diabetic patients.

SEXUAL DYSFUNCTION: A VIGNETTE

Sexual dysfunction is a major health care problem and has been neglected for many years. Sexual problems are under – recognized and under – diagnosed even among clinicians, due to lack of knowledge, regarding handling the clients with sexual problems.

Based on patient's view, a sexual problem arises when an individual presents with the complaint about one or more behavioral, emotional (Affective aspects) or perceptual and intellectual (Cognitive aspects of mental functioning) problems in the individual's sexual relationship or functioning.

In 1966, Master and Johnson[65] described, EPOR model of sexual cycle, which included 4 phases of sexual response cycle; Excitement, Plateau, Orgasmic, and Resolution.

Later in early 1970, Kaplan proposed the DEOR model of sexual cycle, which included a 4 successive phases of sexual response cycle;Desire, Excitement (Arousal), Orgasm, and Resolution.Based on these sexual cycle, "Sexual dysfunction" was referred as a problem anyone of the phase in the sexual response cycle, which stops the individual or couple to experiencing satisfaction during sexual activity.

PSYCHO SEXUALITY:

This term is usually used to describe the personality development and functioning, because these are usually affected by sexuality. Psychosexuality is not merely synonymous with Freudian libido,it applies more than sexual feelings and sexual behavior.

Psycho sexuality involves 4 factors;

(i) **Sexual Identity:** A pattern of an individual's biological primary and secondary sexual characteristics.

(ii) **Gender Identity:** An individual's sense of being a male or female which is usually established within $2-3$ years of age.

(iii) **Sexual Orientation:** An individual's sexual impulses towards an object; Hetero sexual (Opposite sex); Homo sexual (Same sex); or Bisexual (Both sexes).

(iv) **Sexual Behavior:** Desires, fantasies, partner's pursuit, autoerotism, and the various activities performed to satisfy the sexual needs.

Levine SB[66] *et al*, 1989, demonstrated that, an adult sexuality has an unique seven components;

(i) Gender identity,

(ii) Orientation,

(iii) Intention,

(iv) Desire,

(v) Arousal,

(vi) Orgasm, and

(vii)Emotional satisfaction.

In the above components, the first 3 components comprises the sexual identity, and the next 3 components comprises the sexual functioning. The seventh entity, the emotional satisfaction is based on the above first 6 components.

According to ICD – 10, the sexual disorders are categorized based on sexual response cycle;

Sexual Desire Disorders:

(i) Lack or loss of sexual desire,

(ii) Sexual aversion and lack of sexual enjoyment,

(iii) Excessive sexual drive.

Sexual Arousal Disorders: (i) Failure of genital response, it includes

(a) Female sexual arousal disorder,

(b) Male erectile disorder,

(c) Psychogenic impotence.

Orgasmic Disorders: (i) Orgasmic dysfunction,

(ii) Lack of sexual enjoyment,

(iii) Premature ejaculation.

Sexual Pain Disorders: (i) Non organic dyspareunia,

(ii) Non organic vaginismus,

The Resolution phase sexual disorder are added in DSM – IV TR.

It includes:

(i) Post coital dysphoria,

(ii) Post coital headache.

DIABETES MELLITUS AND SEXUAL DYSFUNCTION

SEXUAL DYSFUNCTION IN MEN:

Male sexual dysfunction are classified into dysfunctions of libido, problems with emission or ejaculation or orgasm, impotence, and priapism. Erectile dysfunction (ED) or impotence is the most common of the various sexual dysfunctions among diabetic men. Previously, ED was believed as to be a psychogenic origin, even when it is associated with diabetes. But, we now accept the concept that, ED is the one of the complication of diabetes mellitus and is one of the warning sign for future macro-vascular complications like myocardial infarction.

PHYSIOLOGY OF ERECTILE FUNTION:

Penile tumescence is a vascular process under the exclusive control of the autonomic nervous system. Corpus cavernosum of the penis acts as a erectile tissue and behaves as a sponge, and the erection occurs when it becomes engorged with abundant blood supply. The dilatation of the arterioles and vasculature bed of copus cavernosum leads to compression of the tunica albuginea, which in turn prevents the outflow of blood through the venules.

Thus, smooth muscle relaxation is the key role in the process of erection, as it enhances increased arterial blood flow and decreases the venous outflow. These process is exclusively under the control of parasympathetic nerve fibres, previously it was considered as due to noradrenergic, and anti cholinergic neurons.

Recently, it is clear that NO (Nitric Oxide) is the agent responsible for smooth muscle relaxation with in the corpus cavernosum. Nitric oxide is produced both by parasympathetic nerve terminals and by the vascular

endothelium. The nitric oxide stimulates guanylate cyclase with in the smooth muscle, which leads to increased production of the cGMP (cyclic guanosine mono phosphate - a second messenger) which in turn induces the smooth muscle relaxation, which is probably due to opening up of calcium channels.

PATOPHYSOLOGY OF ERECTLE DYSFUNCTON IN DIABETES:

In men with diabetes mellitus, there is an evidence of erectile dysfunction due to lack of nitric oxide induced smooth muscle relaxation, which is due to diabetic complications of both autonomic neuropathy and vascular endothelial dysfunction. In early stages of diabetes, many men reports that they do not have an erection problem initially, but they complaints of unable to maintain the erection. This is because of the lack of endothelium derived nitric oxide, which occurs prior to the significant autonomic neuropathy.

Most recently, an impairment of EDHF (Endothelium – Derived Hyperpolarizing Factor) was detected, which is essential for endothelium – dependent smooth muscle relaxation. There is an evidence of increased oxygen – free radicals in diabetes, which in turn reduces the nitric oxide induced vasodilator effect.

OTHER FACTORS ASSOCIATED WITH ERECTILEDYSFUNCTION IN DIABETES:

In addition to the autonomic neuropathy and vascular endothelium dysfunction, various other conditions triggering erectile dysfunction in diabetes, like hypertension and large – vessel disease.

Furthermore, the medications taken by the diabetic individual for their allied complications like hypertension, dyslipidemia, antidepressants, antipsychotics, and other miscellaneous drugs can worsen the erectile dysfunction.

There are various conditions are associated with the erectile dysfunctionin diabetes mellitus patients and many of them are the potential cause for erectile dysfunction in diabetic patients like; Psychologic disorders, like as (Performance Anxiety, Sexual problems in the partner, Psychological trauma or abuse, Misconceptions), peripheral arterial disorders, Nervous system damage (multiple sclerosis, CVA, spinal cord lesions), Endocrine abnormalities, others like, high blood pressure, smoking, etc.,.

FEMALE SEXUAL DYSFUCTION IN DIABETES MELLITUS:

The female equivalent of male erectile dysfunction is the reduced vasoconstriction of the vulva and vagina, which lead to impaired arousal and decreased vaginal lubrications. Failure to achieve an erection in male

makes sexual intercourse is impossible, but the decreased vaginal lubrication in female is easily managed with simple treatments with lubricating creams and it may not be considered as an abnormality even by a postmenopausal woman.

The vasoconstriction in female genitalia results in reduced vaginal secretions, and the lack of nitric oxide related smooth muscle relaxation lead to dryness of the vagina which are usually followed by an endothelial dysfunction and nervous system damage.

In women with diabetes, the genitourinary infections is a common finding, especially vaginal candidiasis. Vaginal cadidiasis is more prevalent among diabetic women since the yeasts thrive well in a glucose rich environment,which is commonly due to poor glycemic control. Severe genitourinary infections can be very irritating and painful and further it can interfere with the sexual intercourse.

PSYCHOLOGICAL FACTOR IN SEXUAL DYSFUNCTION

PREDISPOSING FACTORS:

(i) Disturbed relationship,

(ii) Inadequate sexual knowledge,

(iii) Insecurity in the psychosexual role,

(iv) Traumatic sexual experience in early life,

(v) Restrictive upbringing,

(vi) Distractions (especially in females).

PRECIPITATING FACTORS:

(i) Unreasonable expectations (especially males),

(ii) Discard in the relationship,

(iii) Random failure (males),

(iv) Dysfunction in the partner,

(v) Depression or Anxiety, Infidelity,

(vi) Poor intimacy (emotional),

(vii) Child birth (females),

(viii) Reaction to organic disease,

(ix) Expecting a negative outcome (females),

(x) Restricted foreplay,

(xi) Performance anxiety (males),

(xii) Guilt / fear of intimacy,

(xiii) Poor - communication,

(xiv) Poor - self image,

(xv) Decreased attractions between partners,

(xvi) Sexual myths.

SEXUAL DYSFUNCTION; VARIOUS STUDIES

Sexual dysfunctions are fairly common and are almost equal in both the sexes, even though there may be differences in seeking help in different cultures and societies.(r)

In 1970, Masters and Johnson[65] reported that, almost 50% of all Americans have sexual problems sometimes during their life.(r) In 1979, Gebhard and Johnson proposed that an occasional erectile failure occurs in about 35% of males.(R). In 1959, Bagadia[67] and colleagues conducted an one of the first literature on male sexual dysfunction and reported that, ignorance, fears, guilty feelings and superstitions about the sex are the major areas of concern.

Further in 1972, Bagadia[68] and his colleagues conducted an another study and interviewed about 258 male out patients and found that, the anxiety on nocturnal emission was 65% and semen in urine was 47% and concluded that these were the main problems in the unmarried group; and also concluded that, impotence was 48%, premature ejaculation was 34% and passing semen in urine was 47% among the married group.

They also found that diagnosable psychiatric conditions were common among these individuals like anxiety state (57%), reactive depression (16%), and schizophrenia (16%) in that sample.(r)

In 1977, Nakra[69] and Wig *et al*, conducted a study in a medical and psychiatric OPD and found that 10% of males attending these OPD had sexual problems. In 2008, Kendurkar[70] *et al*, and his colleagues reviewed the data of 1242 patients in a period of 1979 – 2005 and concluded that the Premature ejaculation was the important complaint followed with Erectile dysfunction and Dhat syndrome.

In 2009, Singh[71] *et al*, and his colleagues conducted a cross – sectional study and surveyed in 149 married women in a tertiary care hospital and found that, female sexual dysfunction reported in 73.24% of the participants, and also concluded that difficulties in desire was 77.2%, difficulties in arousal was 91.3%, difficulties in lubrication was 96.6% difficulties in orgasm was 86.6%, difficulties in overall satisfaction was 81.2% and the pain during sex was 64.4%. They also found the contributing factors of women of age above 40 years, and low education and the physical illness of both, poor intimacy were attributed to the female sexual problems and none of them sought any professional help.

In 2007, Kar, Koola[72] *et al*, conducted a study and found that, 28.62% of women had orgasmic difficulties and 40% of them reported that, they never masturbated.

In 2008, Avasthi[73,74] *et al*, and his colleagues conducted an interview in 100 women those attending a pediatric OPD for their children in a tertiary care hospital and found that, 17% of them had difficulties during sexual activity, which includes difficulty in orgasm was 9%, pain during intercourse was 7%, poor vaginal secretion was 5%, dyspareunia was 5%.

Among the 17%, the individuals attributed these difficulties to their own health related problem was 14%.

SEXUAL DYSFUNCTION IN DIABETES; VARIOUS STUDIES

Feldman[75] HA *et al*, and his colleagues at 1994, conducted the Massachusetts Male Aging study on impotence and its medical and physiological associations and found that, an exclusive prevalence of complete ED was 5% in men in their 40_S and 15% in those over 70 years.

In a study on diabetic patients who attending a diabetic clinic done at UK, the prevalence of erectile function increased from 13% amongst 30 year olds to 61% amongst men aged over 60 years; overall, the prevalence was 38%.

Hackett[76] GI *et al*,1995, conducted a study and concluded that, the prevalence of erectile dysfunction in diabetes in a general practice population was reported to be even higher, at 55%.

Nicolosi[77] A, Glasser DB, Moreira ED, Villa M *et al*, 2003, conducted a population study to estimate ED occurrence, and they surveyed 600 men in various countries and estimated , the prevalence of ED among men with diabetes rose from 25% at age 40 – 44 years to 70% at age 65 – 70 years.

They also found that, the presence of other medical conditions increases the risk of erectile dysfunction. The prevalence of an erectile dysfunction among diabetic patients was 31.7% only, which increased to 40% in men with diabetes and heart disease and 46.5% in those with

diabetes and hypertension. They also found that, the prevalence which was increased with the duration of diabetes mellitus.

Ma[78] RC, *et al*, and his colleagues at 2008, conducted a study to find the association of erectile dysfunction in type 2 diabetic patients and coronary heart diseases and found that, there is an increased risk of developing heart disease among diabetic patients with erectile dysfunction than without erectile dysfunction.

Bacon[79] CG, and his colleagues Mittleman MA, Kawachi I, Giovannucci E, Glasser DB, Rimm EB *et al*, 2003, and Feldman HA, with his colleagues *et al*, 1994, found that, smoking was an exclusive factor which almost doubled the risk of developing erectile dysfunction after about 7 years.

Bacon[79] CG, and his associates *et al*, 2006, found that, drinking alcohol in moderation appears to reduce the risk of becoming impotent.

According to Craig[80] A, *et al*,1997, (*one in ten*, London: Impotence Association),conducted a survey and found that, depression was reported in 62% of men with erectile dysfunction.

Hackett[76] GI *et al*,1995, conducted a study and found that, 45% of men with diabetes thought about their erectile dysfunction frequently, 23% had the feeling of poor quality of life and 10% had the strong feeling of poor enduring connection between the couples..

Enzlin [81] *et al*, 1998, conducted an analysis of 15 studies carried out in female sexuality in diabetes from 1971, and concluded that, the occurrence of poor sexual arousal and also in a lack of vaginal lubrication was between 15% and 45% in women, which was markedly higher than in women without diabetes.

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES OF THE STUDY

1. To estimate the prevalence of depression, anxiety in type 2 diabetes mellitus patients.

2. To assess the quality of sexual (dys)functions in four dimensions, i.e. psycho – somatic quality of life (PSQoL), sexual activity, sexual dysfunction – self - view, and sexual dysfunction – partner-view in type 2 diabetes mellitus patients.

3. To compare the prevalence of depression and anxiety in type 2 diabetes mellitus patients with age related non- diabetic individuals.

4. To compare the quality of sexual (dys)functions in four dimensions i.e. psycho – somatic quality of life, sexual activity, sexual dysfunction – self - view, and sexual dysfunction – partner-view in type 2 diabetes mellitus patients with age related non-diabetic individuals.

5. To evaluate the impact of Role of sexuality and menopause status on the quality of sexual function.

HYPOTHESIS

1. Prevalence of depression is more in diabetic patients than non – diabetic individuals.

2. Prevalence of anxiety is more in diabetic patients than non – diabetic individuals.

3. The Socio – Demographic factors are significantly influences the occurrence of depression symptoms and anxiety symptoms in type 2 diabetic patients.

4. The quality of sexual (dys)functions in four dimensions;
   (i.e. psycho – somatic quality of life (PSQoL), sexual activity, sexual dysfunction – self - view, and sexual dysfunction – partner-view) are significantly affected in type 2 diabetes mellitus patients than age related non – diabetic individuals.

5. Role of sexuality and menopause influences the quality of sexual function in type 2 diabetic patients.

MATERIALS AND METHODS

STUDY POPULATION:

The study population includes of patients attending as out - patients in Department of Diabetology and the attenders / relatives who accompanying with the patients attending General Medicine, out – patient department.

CASE GROUP:

Diabetic patients who registered in Department of Diabetology, Govt. Stanley medical College Hospital – by applying both inclusion and exclusion criteria and about 80 patients (both genders) - who fulfil the criteria, were selected for applying various scales to assess the depression, anxiety, and quality of sexual (dys)functions after informed consent.

CONTROL GROUP:

Age matched non – diabetic individuals selected from attenders / relatives accompanying with the patients attending the Medical Out-patient Department. About 80 controls (both genders) are selected and compared.

METHOD OF COLLECTION

1. After obtaining informed consent from patients with diabetes attending the Diabetology OPD, they will be interviewed and assessed using various scales. Data will be recorded for this purpose.
2. Information is obtained from patient, reliable informant, and from medical records.
3. Socio – demographic and medical details will be obtained using a questionnaire designed for this study.
4. Investigation reports from OP records.

INCLUSION CRITERIA

1. Patients diagnosed as Diabetes mellitus (based on ADA criteria) in Diabetology Department.

2. Age > 30 years and < 50 years registered in Diabetology Department.

3. Patients of both genders diagnosed as type 2 diabetes mellitus (minimum duration of 6 months).

4.Consenting age related non-diabetic individuals accompanying with patients attending Medical Out – patient department.

EXCLUSION CRITERIA

1. Co-morbid physical disorders: hypertension, alcoholic cirrhosis, endocrine disorders, history of genitor – urinary surgery and neurological or spinal cord lesions.

2. Past or present history of any mental illness.

3. Patients with history of primary sexual dysfunction prior to the diagnosis of type 2 diabetes mellitus.

4. Substance use disorders: alcohol dependence, cannabis use disorder.

5. Use of drugs affecting sexual function (anti - psychotics, anti – depresssants, anti- hypertensives, steroids, fibrates, etc.)

MATERIALS FOR THE ASSESSMENT

1. Socio – demographic pro- forma sheet designed for this study.
2. M.I.N.I - Mini International Neuropsychiatric Interview.
3. Beck depression inventory (BDI).
4. Hamilton rating scale for Anxiety (HAM-A).
5. Quality of Sexual Function (QSF) Scale.

STUDY DESIGN:

The study subjects (Cases) were taken from the Diabetology department OP section, at Government Stanley Medical College Hospital. Those who fulfilled the criteria of both inclusion as well as the exclusion criteria were included for this study. An informed consent was explained and obtained from the patients. A thorough clinical evaluation was done to find out any physical complications, psychiatric illnesses, any drug treatments, since these factors are the confounding factors of this study. Patients OP records were evaluated to obtain a glycemic control status, duration, and age of onset.

An Age matched study subjects (Controls) were taken from the General Medicine department OP section, at Government Stanley Medical College Hospital. The control group population were non – diabetic individuals (attenders / relatives) accompanying with the patients attending the General Medicine Out-patient department. An informed consent was explained and obtained from them. A thorough clinical evaluation was done to find out any physical conditions, psychiatric illnesses, any drug treatments, since these factors are the confounding factors of this study.

ASSESSMENT PROCEDURE OF THE STUDY:

A detailed socio demographic details like age, sex, education, religion, socio economic status, etc., were recorded in the semi – structured pro - forma sheet designed for this study. Patients and as well as the non – diabetic individuals were evaluated clinically, and the records of them were

reviewed thoroughly. Dibetologist guidance was utilized when there was any doubt regarding the patient's (Case) disease status. Those who fulfilled the criteria of both inclusion as well as the exclusion criteria were screened initially by M.I.N.I - Mini International Neuropsychiatric Interview, then the depression was assessed with BDI (Beck Depression Inventory), anxiety with HAM – A (Hamilton Rating Scale for Anxiety), and the quality of sexual function was assessed with QSF (Quality of Sexual Function) Scale.

M.I.N.I (Mini International Neuropsychiatric Interview).

The M.I.N.I (Mini – International Neuropsychiatric Interview) is developed by psychiatrists and clinicians jointly, based on the psychiatric conditions classified in DSM – IV, and in ICD – 10.

This is a short and structured screening diagnostic interview. The time to administrate this diagnostic tool is approximately fifteen minutes. It can be used as a potential first step tool for the screening of psychiatric disorders.It was designed for the clinical trial needs and an epidemiological study needs and it is an accurate short structured psychiatric interview tool and has good reliability and validity.

Sheehan[82] DV *et al*, 1998, and his colleagues validated this diagnostic interview with relation to SCID (Structured Clinical Interview for DSM-III-R), CIDI(Composite International Diagnostic Interview), patients version and an expert clinician opinion and they recommended that M.I.N.I is an potential tool for the screening psychiatric disorders.

Beck's Depression Inventory (BDI):

BDI[83] is the one of the most important self - report rating scale which is a gold standard tool to assess the depression severity. BDI was developed by Beck *et al,* at 1961, and his original and an old BDI consists of 21 items, which concern about various symptoms with varying degrees of severity and rated the scores as 0 – 3. BDI[85] – II edition was released after the introduction of DSM – IV , which included some new items and excluded some items present in the previous scale, and make it more reflective towards DSM – IV. BDI[86] – II consists of 21 items, with a total score ranges of 0 – 84. Scores of 0 -10 considered as normal mood swings of ups and downs; considered as normal, the according to the scores, classified as mild to extreme depression. BDI was used in various studies because of its high reliability and consistent validity, and also the internal consistency of this scale is higher. Since this scale is having the advantage of time consumption, patient self reporting model, and the easy scoring of the severity make it a gold standard tool to assess the severity of depression.

The Hamilton Rating Scale for Anxiety[87] (HAM-A):

This rating scale is administered by the clinician, and it is basically a semi – structured type to evaluate the anxiety symptoms. This scale evaluates symptoms alone and not for any specific disorders. It is one of the rating scale developed first to assess the severity of the symptoms. Still, it is used for clinical studies and for research purposes, because of it's high reliability as well as it's high validity. It also yields a high consistency. This scale is also used in the drug trials for the quantifying the outcome, in Generalized anxiety disorder.[88,89]

This scale consists of fourteen entities, each of the entity is graded as 0 to 4 (not present to severe), higher the scores more severe in the anxiety symptoms. The total score is ranges from 0 – 56, and the scores < 17 indicates mild severity, scores between 18 and 24 indicates mild to moderate severity, scores between 25 and 30 indicates moderate to severe anxiety symptoms, and the total scores more than 30 indicates very severe.

HAM – A scale is a simple scale easy to administer within 20 to 30 minutes[90]. It is useful to monitor the improvement after initiation of drug treatment. This scale was translated in various languages, because of it's acceptable inter – rater reliability.

QUALITY OF SEXUAL FUNCTION (QSF) QUESTIONNAIRE:

The QSF is self-report questionnaire developed by Heinemann[91] *et al*. in 2005 and contains of 40 items, which include 32 items specific to 4 domains and 8 general questions . The four Domains are psycho-somatic quality of life (QOL), 13 items; sexual activity (ACT), 7 items; sexual (dys)function-self- reflection (SDFS), 7 items; and sexual (dys)function-partner's view (SDFP), 5 items. The QSF mainly uses a five-point scale (1-5); some items in sexual activity, sexual (dys)function – self – view, and sexual (dys)function – partner's view domains use a six-point scale (0-5) with the values.

The final score is calculated by adding the score of all items in each domains. The severity of complaints or problems rises as the total score increases.

The score entered in the QSF scale was simply adding up to each domains according to scoring points. Sum of scores were classified into four categories of complaints or problems; no/little, mild, moderate, and severe according to the scoring points.

QSF – Scoring details:

Psychosomatic Quality of life:

≤ 15 ; no, little,

16 – 24; mild,

25 – 34; moderate,

≥ 35 ; severe.

Sexual activity level:

≤ 17 ; no, little,

18 – 23 ; mild,

24 – 26; moderate,

≥ 27 ; severe.

Sexual (dys) function – Self view:

≤ 9 ; no, little,

10 – 15; mild,

16 – 19; moderate,

≥ 20 ; severe.

Sexual (dys) function – Partner view:

≤ 5 ; no, little,

6 –8 ; mild,

9 – 11; moderate,

≥ 12 ; severe.

QSF (Quality of Sexual Function) Total Score:

≤ 54 ; no, little,

55 – 68; mild,

69 – 79; moderate,

≥ 80 ; severe.

QSF Scale is easy to understand, and takes a lesser time to complete, and an easy tool to measure the sexuality as well as the quality of life in a same time and translated in many languages[92]. It can be used in both genders with an easy to evaluate. The Cronbach's alpha coefficient of QSF was 0.8. QSF Korean[93] (QSF – K) version was made recently (*J Korean Med Sci*. Jun 2014; 29(6): 758–763) which was evaluated by test – retest procedure and found that, intra-class correlation coefficients (ICC) value to the total QSF – K was 0.70 (Items Range; 0.52 – 0.70), and the Korean QSF - Cronbach's alpha coefficient was 0.83. (Range; 0.61 - 0.90).Since, the Tamil version is not available, we translated the QSF English version to Tamil and asked the social psychologist and as well as clinical psychologist to evaluate, translate and back – translate to English. Also, this scale was applied in both in Tamil as well as English version, both gives us the same results in a same patient.

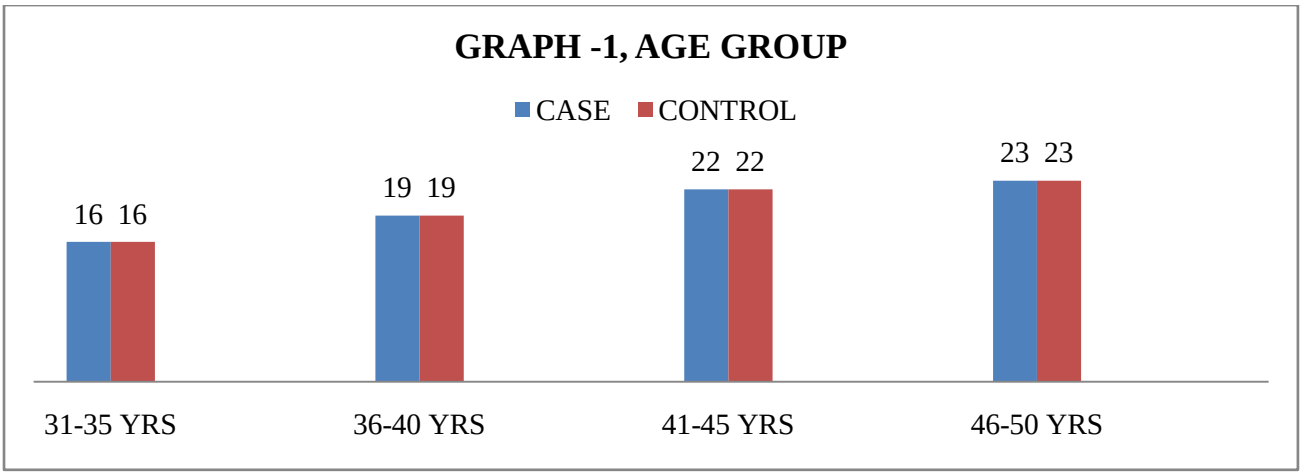
STATISTICAL ANALYSES

Statistical analysis will be done using computerized software (SPSS-20). Descriptive statistics like frequencies, percentages, means and standard deviations will be computed. Parametric and non parametric analysis will be used appropriately depending on the data collected.

OBSERVATIONS AND RESULTS

TABLE – 1. AGE DISTRIBUTION

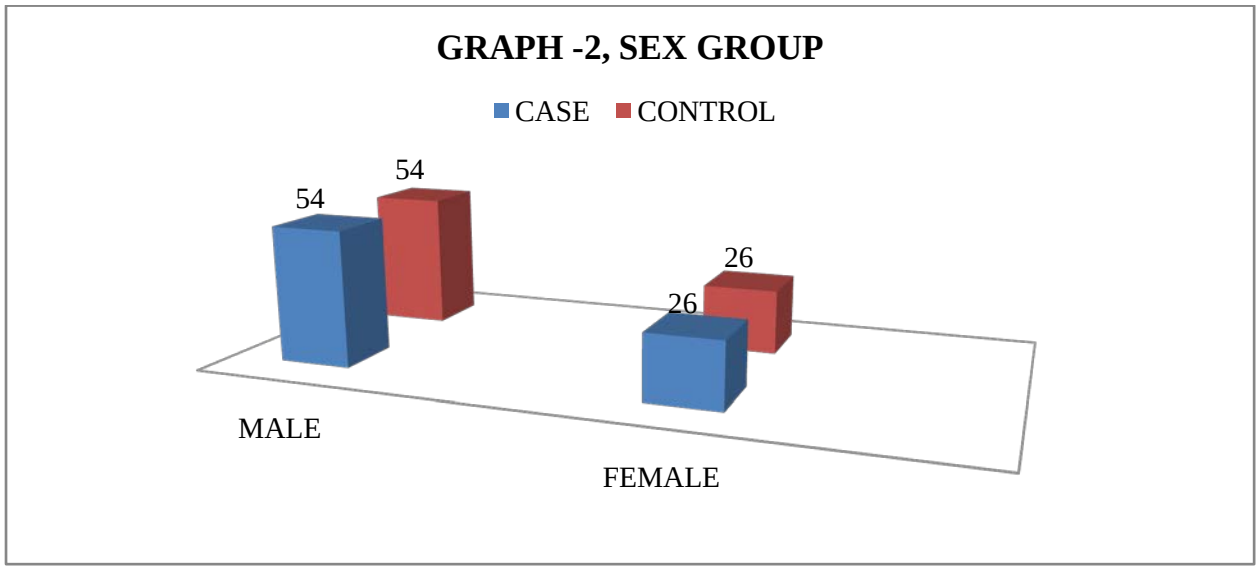
AGE * GROUP					
			GROUP		Total
			CASE	CONTROL	
AGE	31-35 YRS	Count	16	16	32
		% within GROUP	20.0%	20.0%	20.0%
	36-40 YRS	Count	19	19	38
		% within GROUP	23.8%	23.8%	23.8%
	41-45 YRS	Count	22	22	44
		% within GROUP	27.5%	27.5%	27.5%
	46-50 YRS	Count	23	23	46
		% within GROUP	28.8%	28.8%	28.8%
		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



In this study cases and age matched control groups included were, in 31 – 35 age group ;16 cases, 16 controls, in 36 – 40 age group; 19cases , 19 controls, in 41 – 45 age group; 22 cases, 22 controls , in 46 – 50 age group; 23 cases , 23 controls.

TABLE -2. SEX DISTRIBUTION

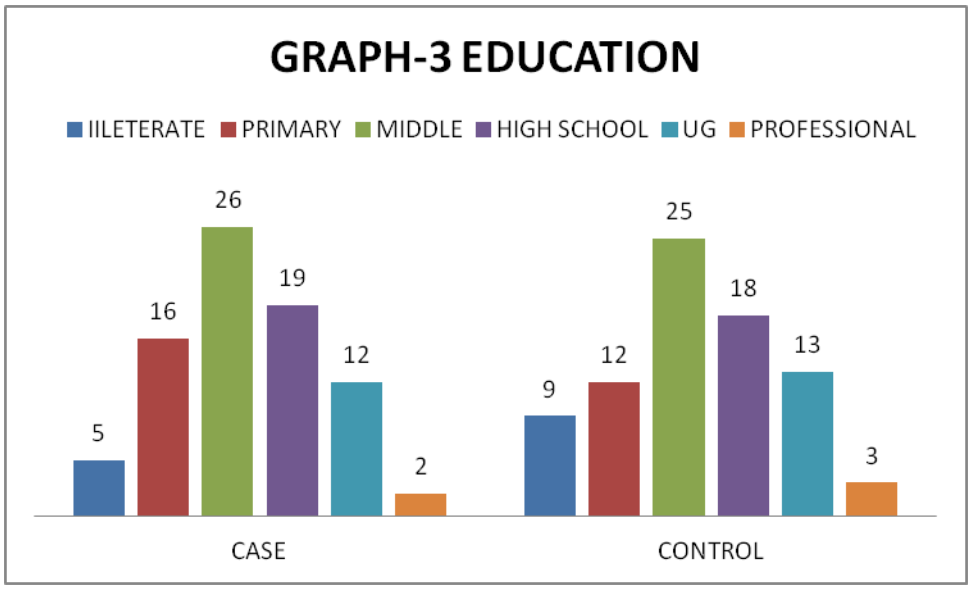
SEX * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEX	MALE	Count	54	54	108
		% within GROUP	67.5%	67.5%	67.5%
	FEMALE	Count	26	26	52
		% within GROUP	32.5%	32.5%	32.5%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



Among 80 cases 54 were males, and 26 were females and an equivalent number of controls were included in this study.

TABLE -3. EDUCATION DISTRIBUTION

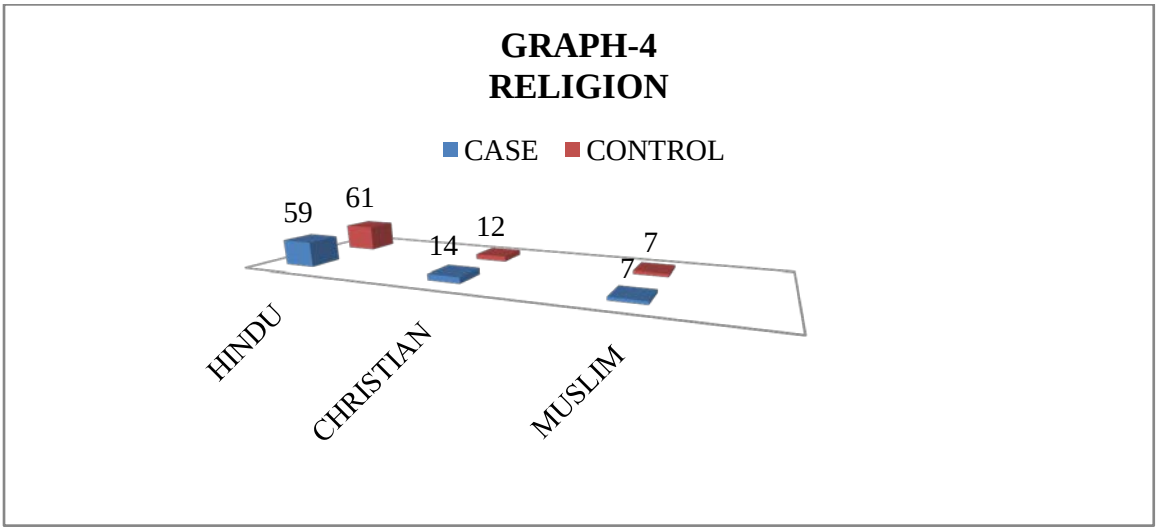
EDUCATION * GROUP			GROUP		Total
			CASE	CONTROL	
EDUCATION	ILLITERATE	Count	5	9	14
		% within GROUP	6.2%	11.2%	8.8%
	PRIMARY	Count	16	12	28
		% within GROUP	20.0%	15.0%	17.5%
	MIDDLE	Count	26	25	51
		% within GROUP	32.5%	31.2%	31.9%
	HIGH SCHOOL	Count	19	18	37
		% within GROUP	23.8%	22.5%	23.1%
	UG	Count	12	13	25
		% within GROUP	15.0%	16.2%	15.6%
	PROFESSIONAL	Count	2	3	5
		% within GROUP	2.5%	3.8%	3.1%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



Among education status illiterate ;5 cases, 9 controls; primary school; 16 cases, 12 controls; middle school;26 cases,25 controls; high school; 19 cases,18 controls; UG; 12 cases, 13 controls; PG ; 2 cases,3 controls.

TABLE – 4. RELIGION DISTRIBUTION.

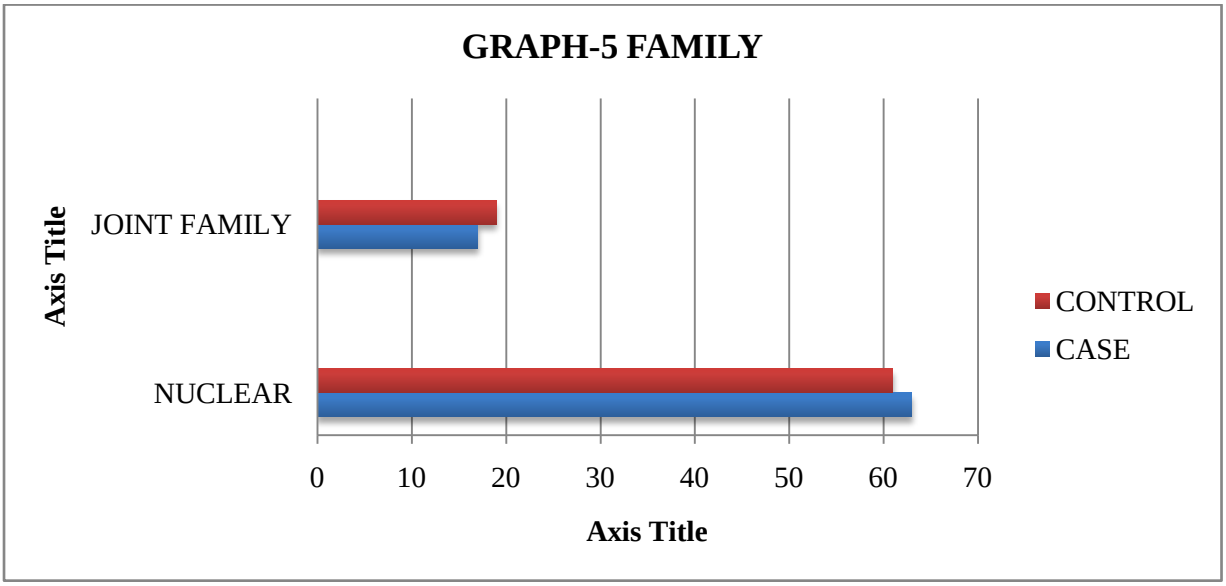
RELIGION * GROUP					
			GROUP		Total
			CASE	CONTROL	
RELIGION	HINDU	Count	59	61	120
		% within GROUP	73.8%	76.2%	75.0%
	CHRISTIAN	Count	14	12	26
		% within GROUP	17.5%	15.0%	16.2%
	MUSLIM	Count	7	7	14
		% within GROUP	8.8%	8.8%	8.8%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



Among the participants of this study, Hindu were 120 (59 cases, 61 controls), Christians were 26 (14 cases, 12 controls),Muslims were 14 (7 cases, 7 controls).

TABLE – 5. FAMILY DISTRIBUTION.

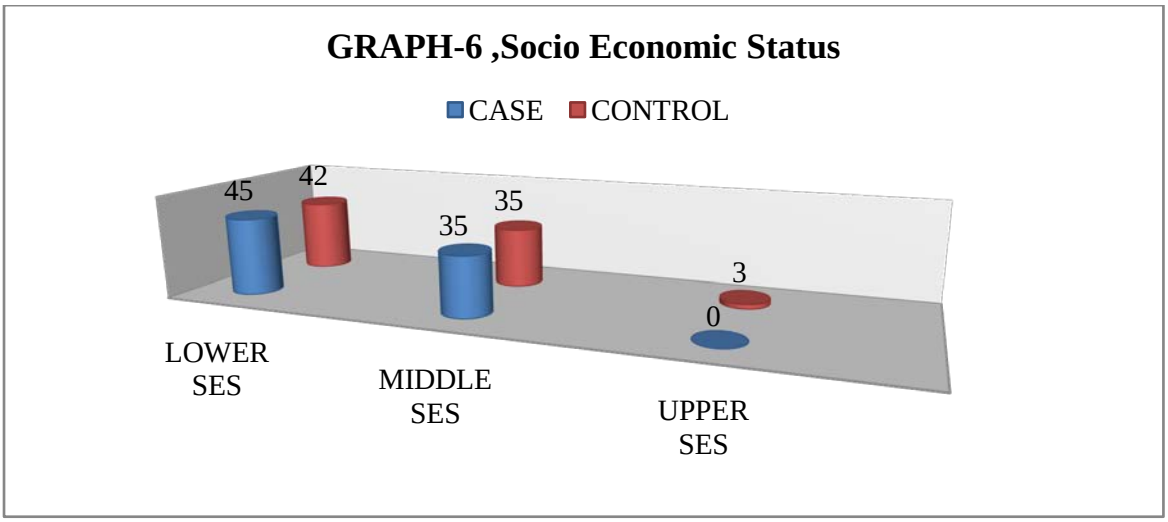
FAMILY * GROUP					
			GROUP		Total
			CASE	CONTROL	
FAMILY	NUCLEAR	Count	63	61	124
		% within GROUP	78.8%	76.2%	77.5%
	JOINT FAMILY	Count	17	19	36
		% within GROUP	21.2%	23.8%	22.5%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



Among the participants of this study, nuclear family were 120 (63 cases, 61 controls), and the joint family were 36 (17 cases, 19 controls).

TABLE – 6. SOCIO ECONOMIC STATUS.

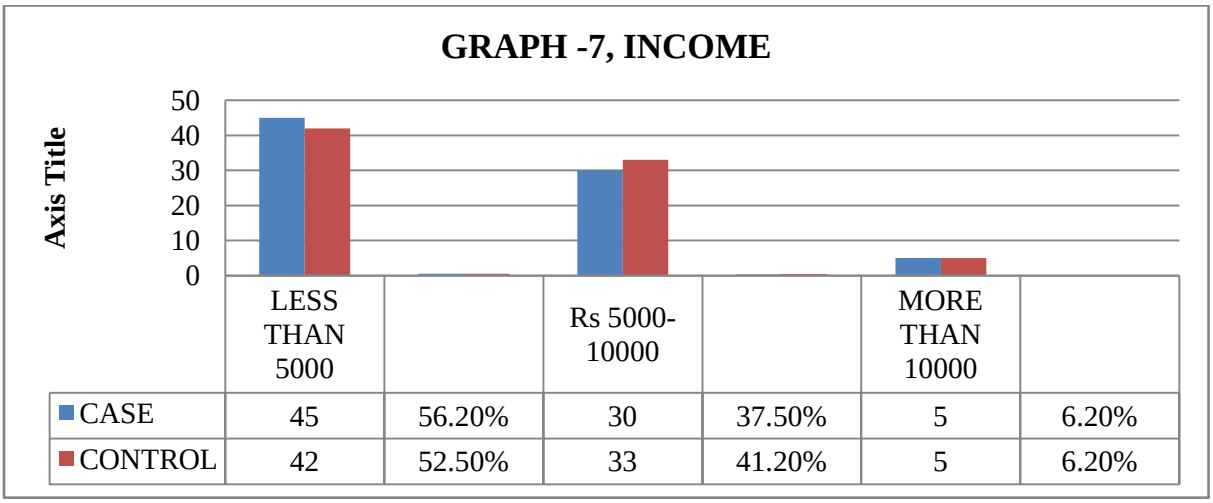
SES * GROUP					
			GROUP		Total
			CASE	CONTROL	
SES	LOWER SES	Count	45	42	87
		% within GROUP	56.2%	52.5%	54.4%
	MIDDLE SES	Count	35	35	70
		% within GROUP	43.8%	43.8%	43.8%
	UPPER SES	Count	0	3	3
		% within GROUP	.0%	3.8%	1.9%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%



Among the participants, low SES were 87 (45 cases, 42 controls), middle SES were 70 (35 cases, 35 controls), and the upper SES were 3 (0 cases, 3 controls).

TABLE – 7. INCOME DISTRIBUTION.

INCOME * GROUP					
			GROUP		Total
			CASE	CONTROL	
INCOME	LESS THAN 5000	Count	45	42	87
		% within GROUP	56.2%	52.5%	54.4%
	Rs 5000-10000	Count	30	33	63
		% within GROUP	37.5%	41.2%	39.4%
	MORE THAN 10000	Count	5	5	10
		% within GROUP	6.2%	6.2%	6.2%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

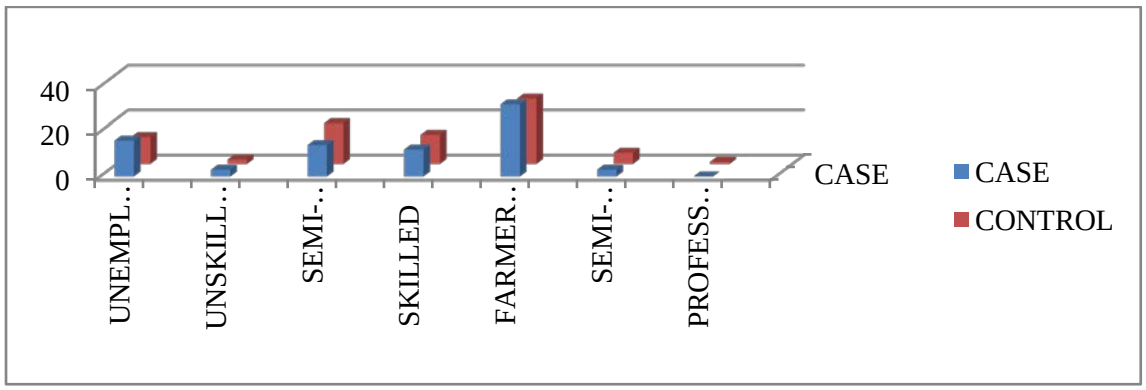


Income less than Rs. 5000 were 87 (45 cases, 42 controls), Rs.5000 – Rs. 10000 were 63(30 cases, 33 controls), and more than Rs. 10000 were 10 (5 cases, 5 controls) were included in this study.

TABLE – 8. OCCUPATION DISTRIBUTION.

OCCUPATION * GROUP					
			GROUP		Total
			CASE	CONTROL	
OCCUPATION	UNEMPLOYED	Count	16	12	28
		% within GROUP	20.0%	15.0%	17.5%
	UNSKILLED	Count	3	2	5
		% within GROUP	3.8%	2.5%	3.1%
	SEMI-SKILLED	Count	14	18	32
		% within GROUP	17.5%	22.5%	20.0%
	SKILLED	Count	12	13	25
		% within GROUP	15.0%	16.2%	15.6%
	FARMER-CLERK-SELF EMPLOYED	Count	32	29	61
		% within GROUP	40.0%	36.2%	38.1%
	SEMI- PROFESSION	Count	3	5	8
		% within GROUP	3.8%	6.2%	5.0%
	PROFESSION	Count	0	1	1
		% within GROUP	.0%	1.2%	.6%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

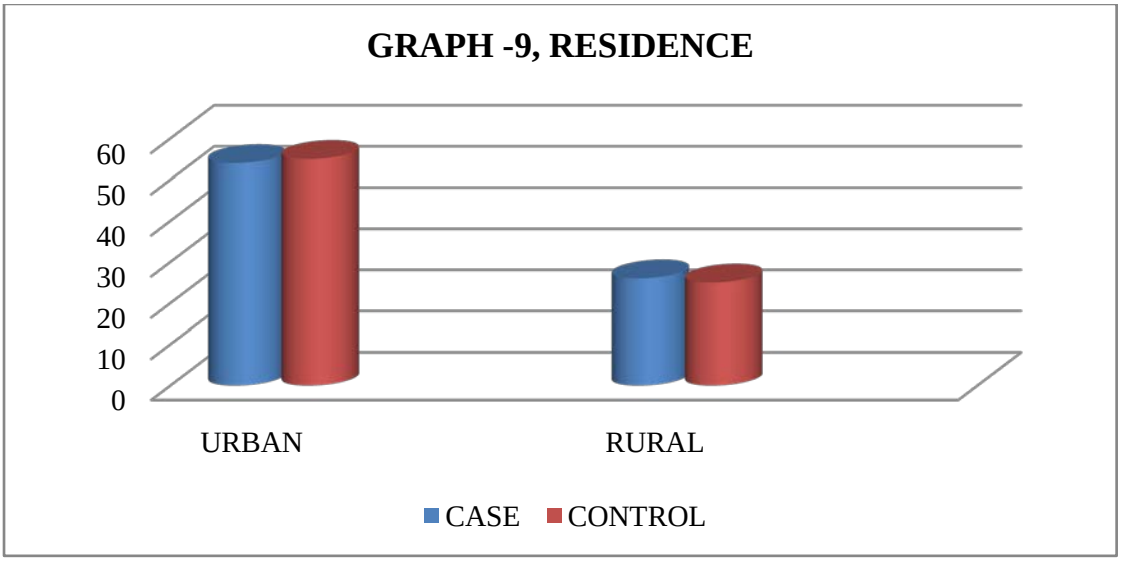
GRAPH 8, OCCUPATION:



In this study, Un employed were 28 (16 cases, 12 controls), Un skilled were 5 (3 cases, 2 controls), Semi skilled were 32 (14 cases, 18 controls), Skilled were 25 (12 cases, 13 controls), Farmer / Clerk /Self employed were 61 (32 cases, 29 controls), Semi professional were 8 (3 cases, 5 controls), and Professionals were 1 (0 case, 1 control) were included in this study.

TABLE -9. RESIDENCE DISTRIBUTION.

RESIDENCE * GROUP					
			GROUP		Total
			CASE	CONTROL	
RESIDENCE	URBAN	Count	54	55	109
		% within GROUP	67.5%	68.8%	68.1%
	RURAL	Count	26	25	51
		% within GROUP	32.5%	31.2%	31.9%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

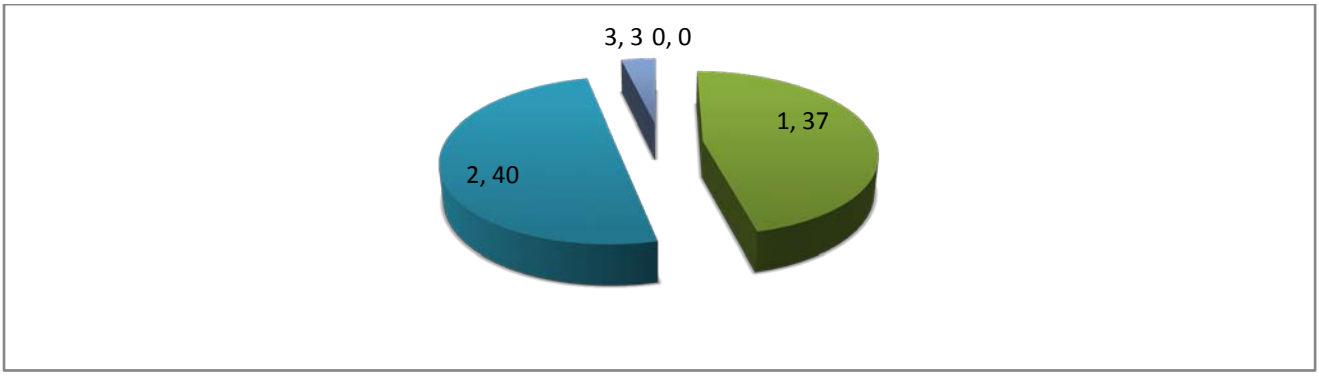


Among the participants 109 were in urban region (54 cases, 55 controls) and 51 were in rural region (26 cases, 25 controls).

TABLE -10. GLYCEMIC CONTROL IN CASES.

GLY_CONTROL * GROUP					
			GROUP		Total
			CASE	CONTROL	
GLY_CONTROL	0	Count	0	80	80
		% within GROUP	.0%	100.0%	50.0%
	1	Count	37	0	37
		% within GROUP	46.2%	.0%	23.1%
	2	Count	40	0	40
		% within GROUP	50.0%	.0%	25.0%
	3	Count	3	0	3
		% within GROUP	3.8%	.0%	1.9%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

GRAPH – 10, Glycemic Control In Cases.

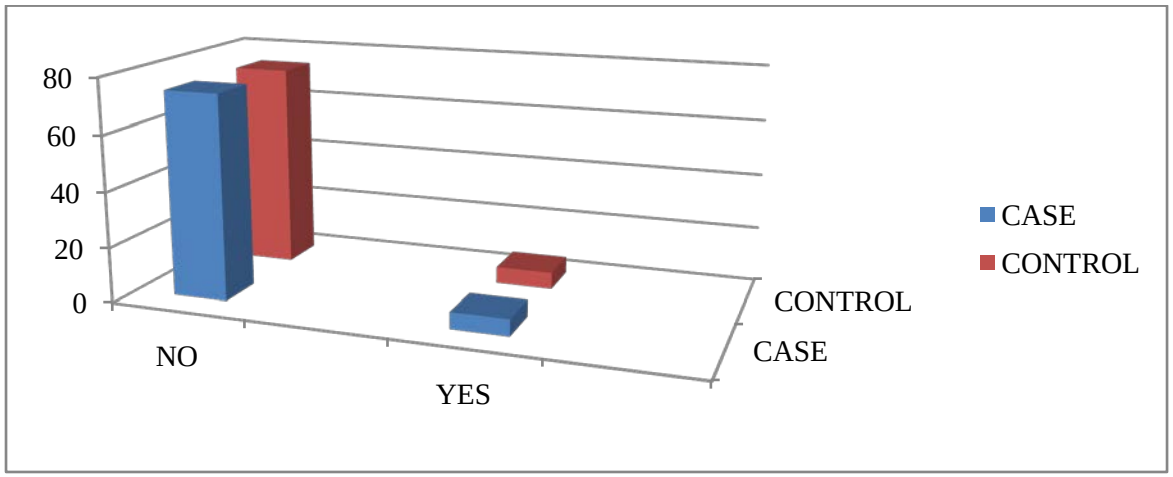


Among the type 2 diabetic patients, 30 were in good glycemic control, 40 were in fair glycemic control, and 3 were in poor glycemic control.

TABLE – 11. MENOPAUSE STATUS.

MENOPAUSE STATUS * GROUP					
			GROUP		Total
			CASE	CONTROL	
MENOP_STATUS	NO	Count	74	74	148
		% within GROUP	92.5%	92.5%	92.5%
	YES	Count	6	6	12
		% within GROUP	7.5%	7.5%	7.5%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

GRAPH – 11, MENOPAUSE STATUS:

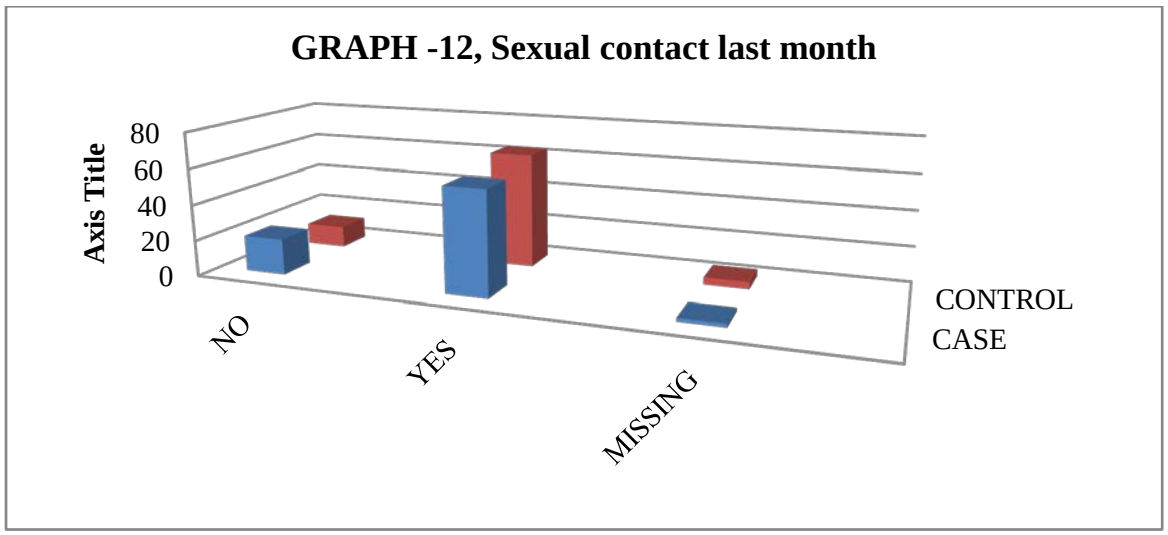


Menopause status among type 2 diabetic patients were 6 and also in the control group were 6, and they are included in this study.

TABLE – 12. SEXUAL CONTACTS IN LAST MONTH.

SEXUAL_CONT_LMONTH * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEXUAL_CONT_LMONTH	NO	Count	20	12	32
		% within GROUP	25.0%	15.0%	20.0%
	YES	Count	58	64	122
		% within GROUP	72.5%	80.0%	76.2%
	MISSING	Count	2	4	6
		% within GROUP	2.5%	5.0%	3.8%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

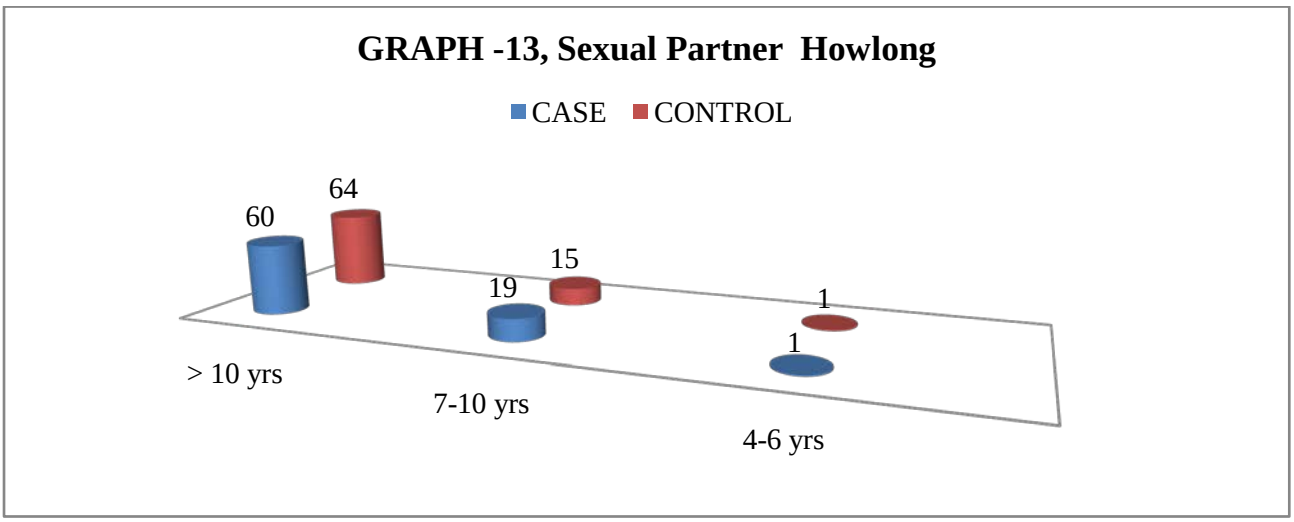
Chi square; 35.584[a], df; 6, p – value; 0.000. SIGNIFICANT.



Among the participants, there was no sexual contact in last month were 32 (20 cases, 12 controls), sexual contact present in last month were 122 (58 cases, 64 controls), and the sexual contact was missing due to physical conditions, and due to religious purpose were 6 (2 cases, 4 controls).

TABLE – 13. SEXUAL PARTNER HOWLONG.

SEXUAL _PART_HOWLONG * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEXUAL _PART_HOWLONG	> 10 yrs	Count	60	64	124
		% within GROUP	75.0%	80.0%	77.5%
	7-10 yrs	Count	19	15	34
		% within GROUP	23.8%	18.8%	21.2%
	4-6 yrs	Count	1	1	2
		% within GROUP	1.2%	1.2%	1.2%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

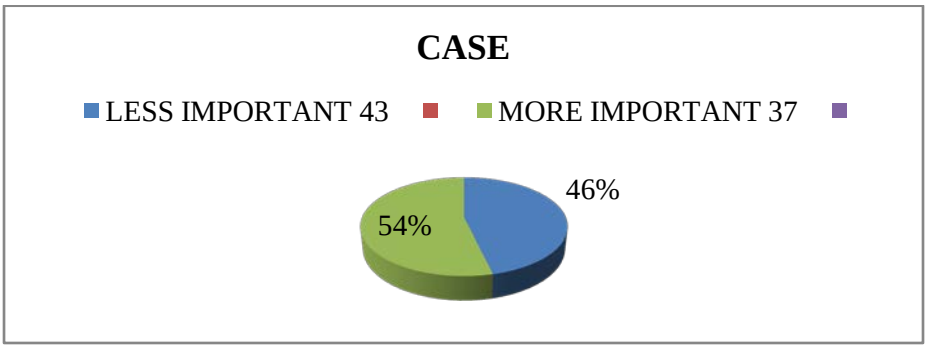


Among the participants of this study, sexual relationship with partner for more than 10 years were 124 (60 cases, 64 controls), between 7 – 10 years were 34 (19 cases, 15 controls), and between 4 – 6 years were 2(1 case, 1 control).

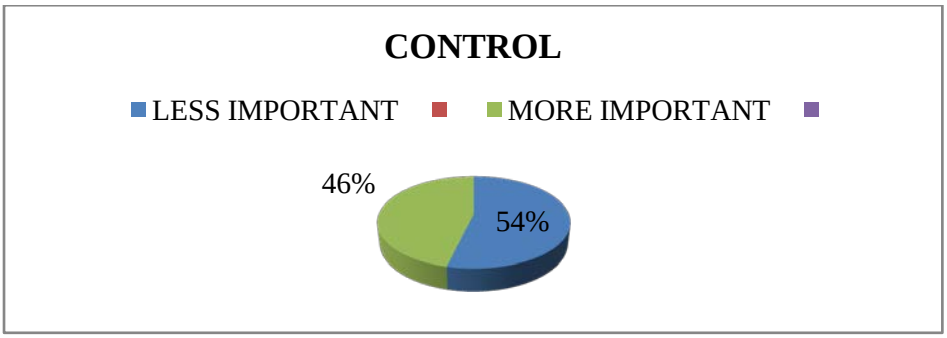
TABLE -14. ROLE OF SEXUALITY.

ROLE_SEXUALITY * GROUP			GROUP		Total
			CASE	CONTROL	
ROLE_SEXUALITY	LESS IMPORTANT	Count	37	43	80
		% within GROUP	46.2%	53.8%	50.0%
	MORE IMPORTANT	Count	43	37	80
		% within GROUP	53.8%	46.2%	50.0%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

GRAPH – 14 (i), ROLE OF SEXUALITY IN CASES.



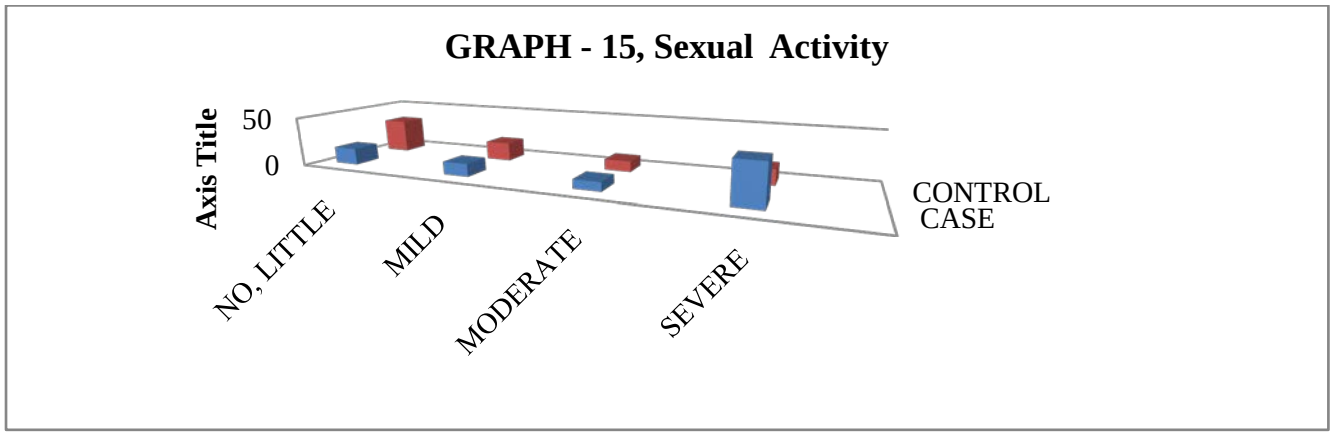
GRAPH – 14 (ii), ROLE OF SEXUALITY IN CONTROLS.



Role of sexuality was less important were 80 (37 cases, 43 control), more important were 80 (43 cases, 37 controls) reported.

TABLE – 15. SEXUAL ACTIVITY DISTRIBUTION.

SEXUAL_ACTIVITY * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEXUAL_ACTIVITY	NO, LITTLE	Count	17	34	51
		% within GROUP	21.2%	42.5%	31.9%
	MILD	Count	13	19	32
		% within GROUP	16.2%	23.8%	20.0%
	MODERATE	Count	9	11	20
		% within GROUP	11.2%	13.8%	12.5%
	SEVERE	Count	41	16	57
		% within GROUP	51.2%	20.0%	35.6%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

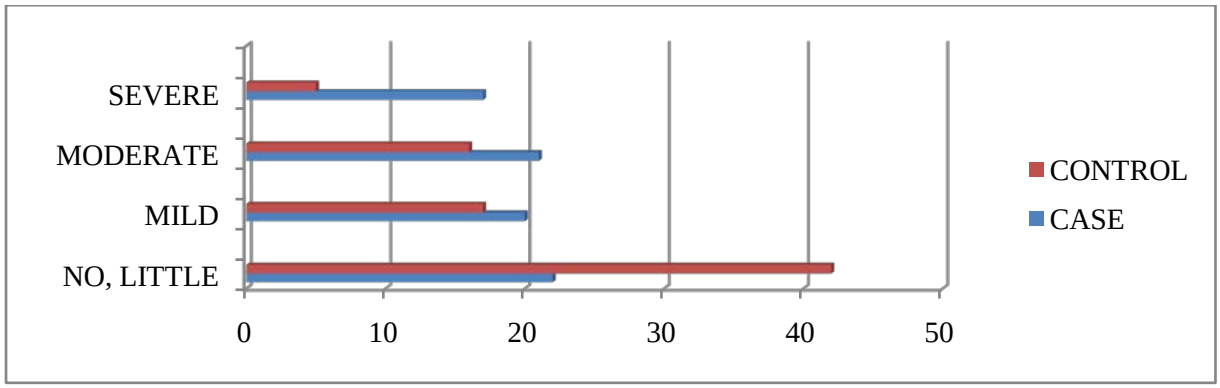


Regarding the sexual activity among the participants, no problem in sexual activity reported was 51 (17 cases, 34 controls), mild problem was 32 (13 cases, 19 controls), moderate problem was 20 (9 cases, 11 controls, and the severe problem was 57 (41 cases, 16 controls) reported.

TABLE – 16. SEXUAL DYSFUNCTION – SELF VIEW.

SEXUAL _DYSFUN_SELFVIEW * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEXUAL _DYSFUN_SELFVIEW	NO, LITTLE	Count	22	42	64
		% within GROUP	27.5%	52.5%	40.0%
	MILD	Count	20	17	37
		% within GROUP	25.0%	21.2%	23.1%
	MODERATE	Count	21	16	37
		% within GROUP	26.2%	20.0%	23.1%
	SEVERE	Count	17	5	22
		% within GROUP	21.2%	6.2%	13.8%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

GRAPH – 16, SEXUAL DYSFUNCTION SELF VIEW:



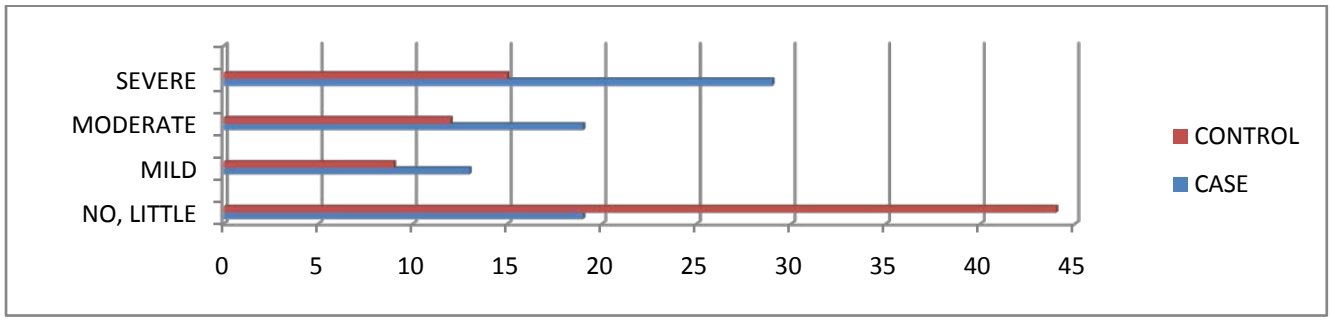
Regarding the sexual (dys) function self view report, no problem reported was 64 (22 cases, 42 controls), mild problem was 37 (20 cases, 17 controls), moderate problem was 37 (21 cases, 16 controls), and the severe problem reported was 22 (17 cases, 5 controls).

\

TABLE – 17. SEXUAL DYSFUCTION PRTNER VIEW.

SEXUAL _DYSFUN_PARTVIEW * GROUP					
			GROUP		Total
			CASE	CONTROL	
SEXUAL _DYSFUN_PARTVIEW	NO, LITTLE	Count	19	44	63
		% within GROUP	23.8%	55.0%	39.4%
	MILD	Count	13	9	22
		% within GROUP	16.2%	11.2%	13.8%
	MODERATE	Count	19	12	31
		% within GROUP	23.8%	15.0%	19.4%
	SEVERE	Count	29	15	44
		% within GROUP	36.2%	18.8%	27.5%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

GRAPH – 17, SEUAL DYSFUNCTION PARTNER'S VIEW:



Regarding the sexual (dys) function partner view, no problem was reported in 63 participants (19 cases, 44 controls), mild problem was 22 (13 cases, 9 controls), moderate problem was 31 (19 cases, 12 controls), and severe problem was reported in 44 (29 cases, 15 controls).

TABLE – 18, BDI DISTRIBUTION.

BDI			Patients		Total
			Type 2 DM	Normal	
BDI_	Normal	N0	38	66	104
		%	47.5%	82.5%	65.0%
	Mild	N0	30	9	39
		%	37.5%	11.2%	24.4%
	Border line depression	N0	6	3	9
		%	7.5%	3.8%	5.6%
	Moderate	N0	6	2	8
		%	7.5%	2.5%	5.0%
Total		N0	80	80	160
		%	100.0%	100.0%	100.0%

p – value;0.000, Odds ratio; 5.21, 95% confident interval (.093, .396) Pearson Chi squre;21.846, df;3,

Among 80 type 2 diabetic patients 42 patients had the symptoms of depression (52.5%), and among the control group 14 individuals (17.5%) had symptoms of depression in varying severity. Among 42 type 2 diabetic patients with depression, 30 patients (37.5%) had mild depression,6 patients (7.5%) had borderline depression, and 6 patients (7.5%) had moderate depression, and among 14 non – diabetic individuals, 9 individuals(11.2%) had mild depression, 3 individuals (3.8%) had borderline depression and 2 individuals (2.5%) had moderate depression.p – value; 0.000, (Statistically significant), Odds Ratio for Group (case / control) = 5.21, 95% Confidence Interval (.093, .396) Pearson Chi squre;21.846, df;3, which implies that depression symptoms among T2DM patients are 5.2 times higher than the non – diabetic general population.

GRAPH – 18, BDI DISTRIBUTION.

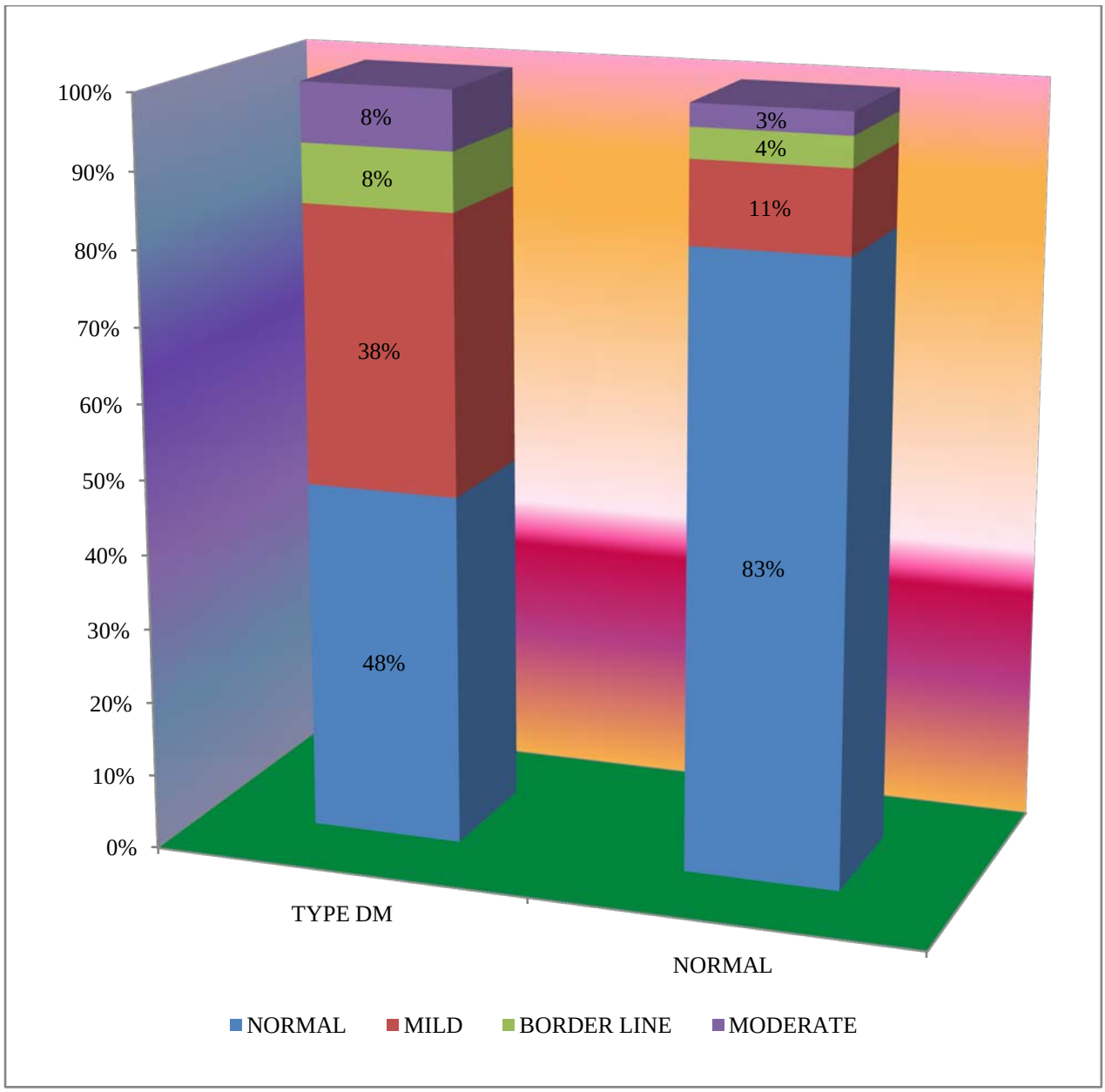


TABLE – 19. HAM – A DISTRIBUTION.

HAM - A			Patients		Total
			type 2 DM	Normal	
HAM - A	Not Present	N0	39	65	104
		%	48.8%	81.2%	65.0%
	Mild	N0	31	11	42
		%	38.8%	13.8%	26.2%
	Mild to moderate	N0	6	3	9
		%	7.5%	3.8%	5.6%
	Moderate to severe	N0	4	1	5
		%	5.0%	1.2%	3.1%
Total		N0	80	80	160
		%	100.0%	100.0%	100.0%

Among 80 type 2 diabetic patients 41 patients had the symptoms of anxiety (51.25%), and among the control group 15 individuals (18.8%) had symptoms of depression in varying severity. Among 41 type 2 diabetic patients with anxiety, 31 patients (38.8%) had mild anxiety,6 patients (7.5%) had mild to moderate anxiety, and 4 patients (5.0%) had moderate anxiety, and among 15 non – diabetic individuals, 11 individuals(13.8%) had mild anxiety, 3 individuals (3.8%) had mild to moderate anxiety, and 1 individuals(1.2%) had moderate anxiety. (Chi – squre;13.434, p – value;<0.001). Odds ratio; 4.12; implies that anxiety symptoms among type 2 diabetic patients are 4.12 times more than non – diabetic individuals.

GRAPH – 19, HAM – A DISTRIBUTION.

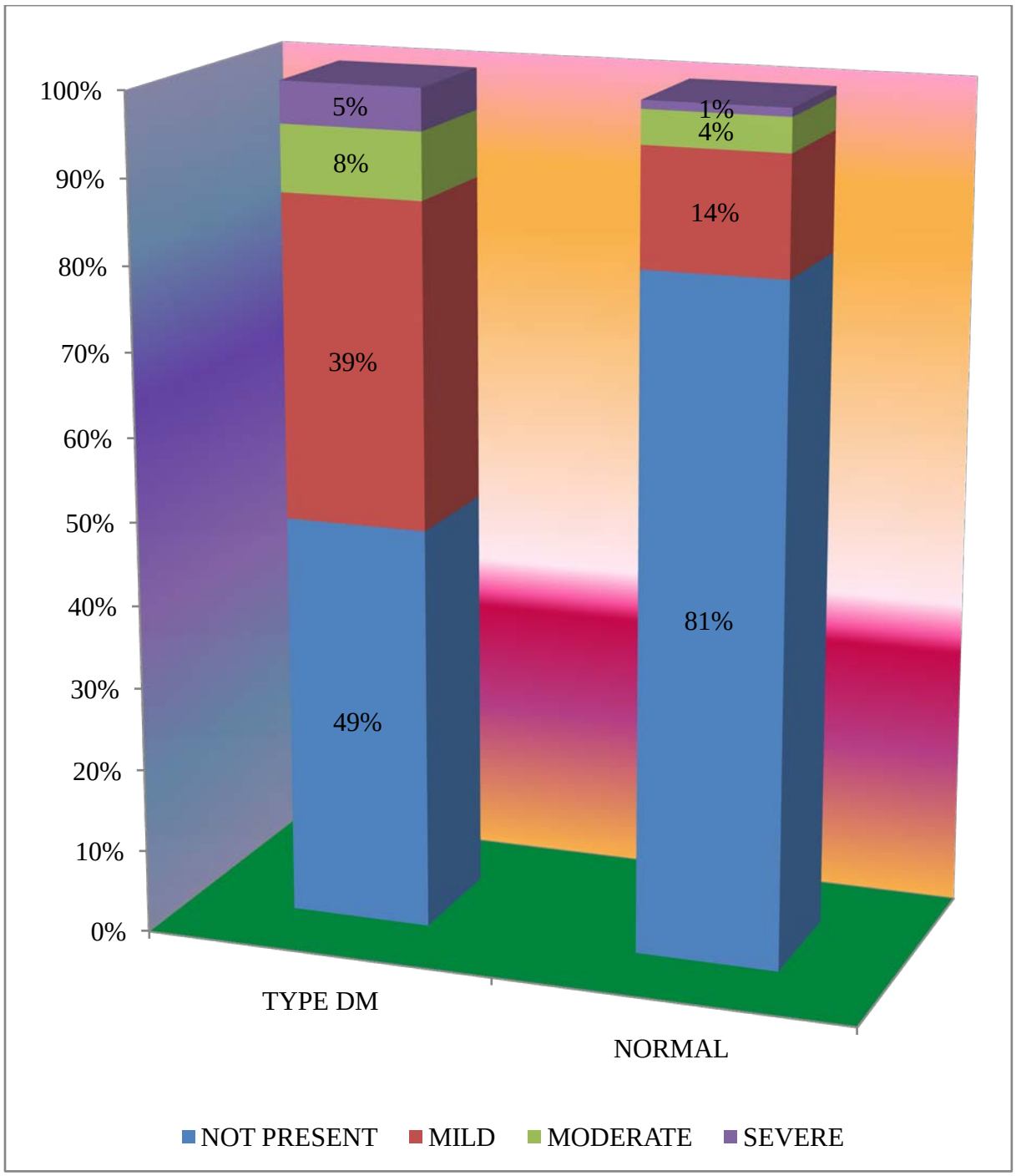


TABLE – 20. QSF – TOTAL.

QSF - TOTAL			Patients		Total
			type 2 DM	Normal	
QSF - TOTAL	No	N0	35	60	95
		%	43.8%	75.0%	59.4%
	Mild	N0	22	8	30
		%	27.5%	10.0%	18.8%
	Moderate	N0	16	10	26
		%	20.0%	12.5%	16.2%
	Severe	N0	7	2	9
		%	8.8%	2.5%	5.6%
Total		N0	80	80	160
		%	100.0%	100.0%	100.0%

Quality of Sexual Function, 56.2% (n=45) of the T2DM patients had sexual dysfunction in varying degrees.

Among 45 patients of T2DM, 22 patients had mild degree of sexual dysfunction (27.5%), 16 patients had moderate degree of sexual dysfunction (20%), and 7 patients had severe degree (8.8%). In the control group, only 25% (n= 20) of the individuals had varying degrees of sexual dysfunction, among them mild; 8 (10%), moderate; 10 (12.5%), and severe; 2 (2.5%). Odds ratio; 3.85, p- value 0.001 implies statistically significant; i.e. in T2DM patients sexual dysfunction is 3.85 times higher than non – diabetic general population.

GRAPH – 20, QSF – TOTAL DISTRIBUTION.

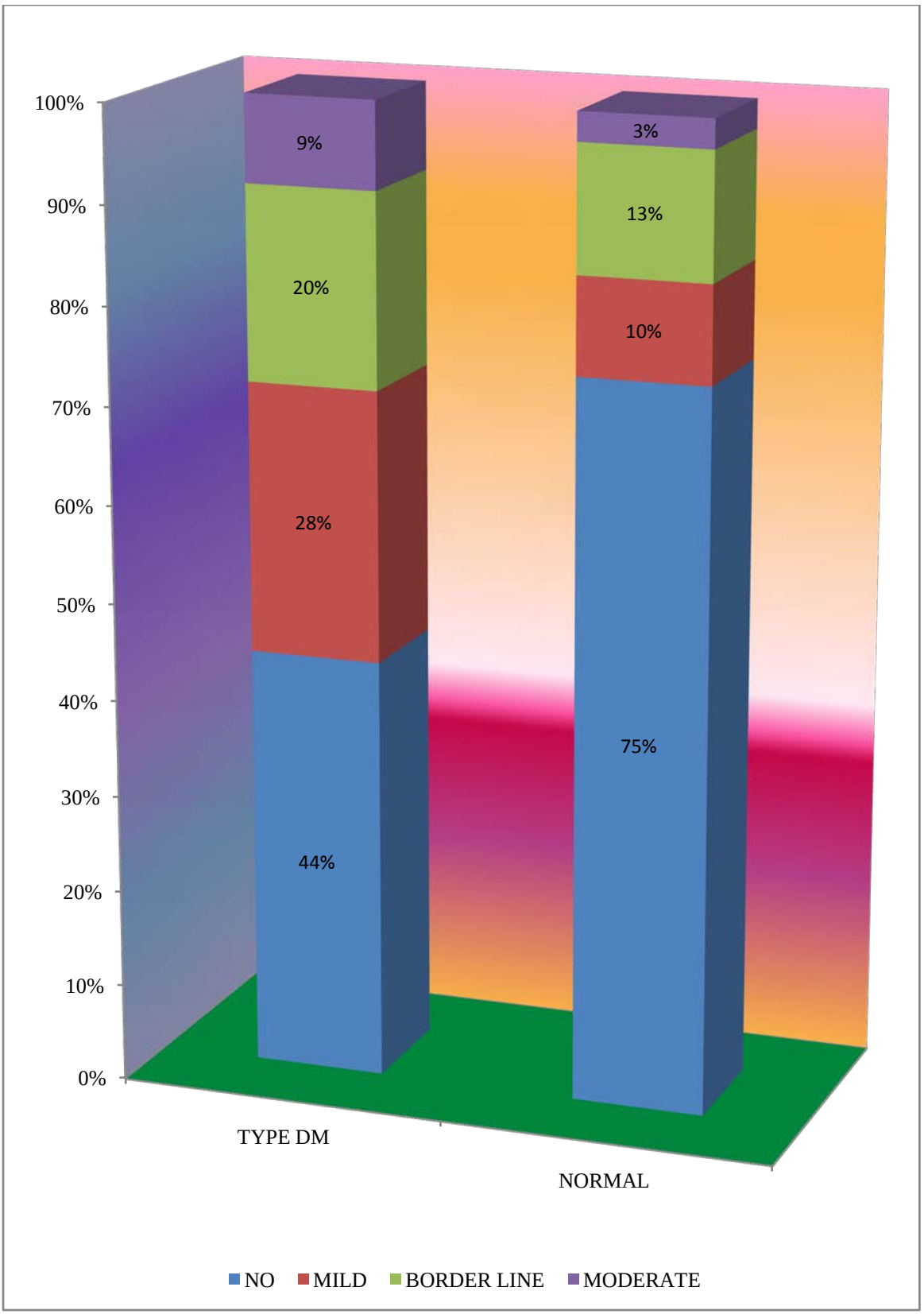
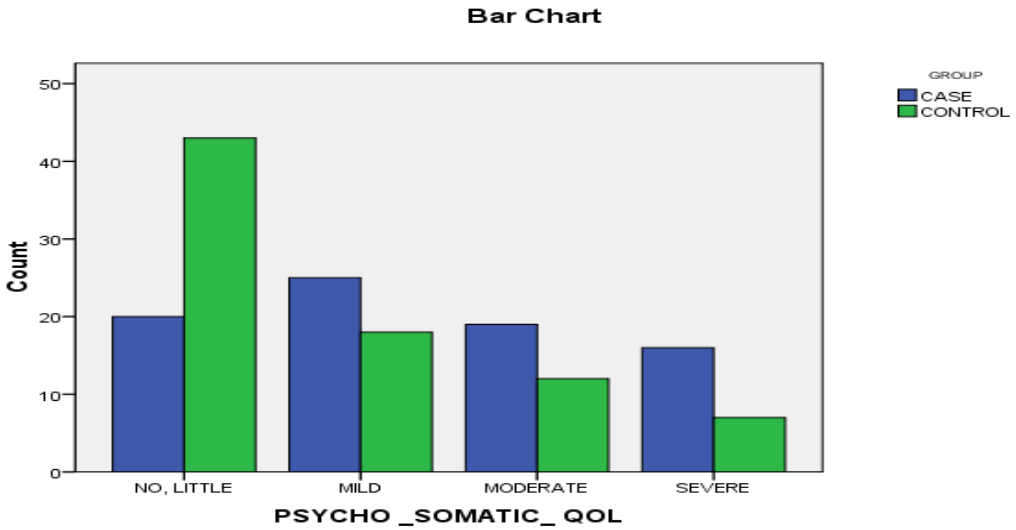


TABLE – 21. PSYCHO SOMATIC QoL.

PSYCHO SOMATIC QoL.					
			GROUP		Total
			CASE	CONTROL	
PSYCHO _SOMATIC_ QOL	NO, LITTLE	Count	20	43	63
		% within GROUP	25.0%	53.8%	39.4%
	MILD	Count	25	18	43
		% within GROUP	31.2%	22.5%	26.9%
	MODERATE	Count	19	12	31
		% within GROUP	23.8%	15.0%	19.4%
	SEVERE	Count	16	7	23
		% within GROUP	20.0%	8.8%	14.4%
Total		Count	80	80	160
		% within GROUP	100.0%	100.0%	100.0%

Pearson Chi-Square P- VALUE -0.002 SIGNIFICANT

GRAPH – 21, PSYCHO SOMATIC QoL



In this, 75% (n=60) of the T2DM patients had complaints in this domain, where as in control group only 46.2% (n=37) . Among 60 T2DM patients, mild; 25 (31.2%), moderate; 19 (23.8%), severe; 16 (20%), and in the

control group mild; 18 (22.5%), moderate; 12 (15%), and the severe; 7 (8.8%) were reported. p – value; 0.002. Significant. Odds ratio; 3.486; implies that Psycho – somatic quality of life among T2DM patients is 3.5 times affected more, than with non – diabetic individual

ADDITIONAL TABLE;

ASSOCIATION OF PRESENCE DEPRESSION AND ANXIETY IN BOTH CASE AND CONTROLS				
			VAR00001	Percentage
			Both BDI & HAMA	
Group 1; T2DM/Group 2;normal	type 2 dm	Count	23	79%
		% of DM	46	
	Normal	Count	6	21%
		% of al	12%	
Total		Count	29	
		% of Total	100.0%	100%

29 Participants had both anxiety and depression.

BDI_ * HAMA Crosstabulation						
			HAMA			Total
			Mild	Mild to moderate	Moderate to severe	
BDI_	Mild	Count	14	4	0	18
		% within BDI_	77.8%	22.2%	.0%	100.0%
	Border line depression	Count	3	2	1	6
		% within BDI_	50.0%	33.3%	16.7%	100.0%
	Moderate	Count	2	2	1	5
		% within BDI_	40.0%	40.0%	20.0%	100.0%
Total		Count	19	8	2	29
		% within BDI_	65.5%	27.6%	6.9%	100.0%

T2DM; 23, Non Diabetic; 6. Odds ratio; 4.97.

TABLE:22 . ASSOCIATION FOR DEMOGRAPHIC VARIABLE AND DEPRESSION FOR DM

		BDI_													
		Normal		Mild		Border line		Moderate		severe		Extreme			
		No	%	No	%	No	%	No	%	No	%	No	%	Chi square	P value
SEX	Male	27	71.10%	20	66.70%	4	66.70%	3	50.00%	0	0.00%	0	0.00%	1.068	0.785
	Female	11	28.90%	10	33.30%	2	33.30%	3	50.00%	0	0.00%	0	0.00%		
EDUCATION	Illiterate	2	5.30%	2	6.70%	0	0.00%	1	16.70%	0	0.00%	0	0.00%	20.06	0.169
	Primary	5	13.20%	10	33.30%	0	0.00%	1	16.70%	0	0.00%	0	0.00%		
	Middle	16	42.10%	5	16.70%	2	33.30%	3	50.00%	0	0.00%	0	0.00%		
	High school	7	18.40%	8	26.70%	4	66.70%	0	0.00%	0	0.00%	0	0.00%		
	UG	6	15.80%	5	16.70%	0	0.00%	1	16.70%	0	0.00%	0	0.00%		
	PG	2	5.30%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	30	78.90%	26	86.70%	2	33.30%	5	83.30%	0	0.00%	0	0.00%	8.595	0.035*
	Joint Family	8	21.10%	4	13.30%	4	66.70%	1	16.70%	0	0.00%	0	0.00%		
SES	Low	20	52.60%	16	53.30%	4	66.70%	5	83.30%	0	0.00%	0	0.00%	2.359	0.501
	Middle	18	47.40%	14	46.70%	2	33.30%	1	16.70%	0	0.00%	0	0.00%		
	Upper	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
INCOME	< Rs 5000	20	52.60%	16	53.30%	4	66.70%	5	83.30%	0	0.00%	0	0.00%	5.59	0.536
	Rs5000- Rs	16	42.10%	12	40.00%	2	33.30%	0	0.00%	0	0.00%	0	0.00%		
	More than	2	5.30%	2	6.70%	0	0.00%	1	16.70%	0	0.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
RESIDENCE	Urban	27	71.10%	19	63.30%	4	66.70%	4	66.70%	0	0.00%	0	0.00%	0.46	0.928
	Rural	11	28.90%	11	36.70%	2	33.30%	2	33.30%	0	0.00%	0	0.00%		

TABLE: 23. ASSOCIATION FOR DEMOGRAPHIC VARIABLE AND DEPRESSION FOR NORMAL

		BDI_													
		Normal		Mild		Border line		Moderate		severe		Extreme			
		N0	Column N %	N0	Column N %	N0	Column N %	N0	Column N %	N0	Column N %	N0	Column N %		
SEX	Male	48	72.70%	5	55.60%	0	0.00%	1	50.00%	0	0.00%	0	0.00%	7.917*	0.047
	Female	18	27.30%	4	44.40%	3	100.00%	1	50.00%	0	0.00%	0	0.00%		
EDUCATION	Illiterate	6	9.10%	0	0.00%	2	66.70%	1	50.00%	0	0.00%	0	0.00%	3.631*	0.007
	Primary School	8	12.10%	4	44.40%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	Middle school	22	33.30%	3	33.30%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	High school	17	25.80%	1	11.10%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	UG	11	16.70%	1	11.10%	0	0.00%	1	50.00%	0	0.00%	0	0.00%		
	PG	2	3.00%	0	0.00%	1	33.30%	0	0.00%	0	0.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	52	78.80%	6	66.70%	2	66.70%	1	50.00%	0	0.00%	0	0.00%	1.604	0.658
	Joint Family	14	21.20%	3	33.30%	1	33.30%	1	50.00%	0	0.00%	0	0.00%		
SES	Low	35	53.00%	4	44.40%	2	66.70%	1	50.00%	0	0.00%	0	0.00%	9.354	0.155
	Middle	29	43.90%	5	55.60%	0	0.00%	1	50.00%	0	0.00%	0	0.00%		
	Upper	2	3.00%	0	0.00%	1	33.30%	0	0.00%	0	0.00%	0	0.00%		
INCOME	< Rs 5000	35	53.00%	4	44.40%	2	66.70%	1	50.00%	0	0.00%	0	0.00%	13.278*	0.038
	Rs5000- Rs 10000	28	42.40%	5	55.60%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	More than Rs 10000	3	4.50%	0	0.00%	1	33.30%	1	50.00%	0	0.00%	0	0.00%		
RESIDENCE	Urban	46	69.70%	7	77.80%	1	33.30%	1	50.00%	0	0.00%	0	0.00%	2.448	0.485
	Rural	20	30.30%	2	22.20%	2	66.70%	1	50.00%	0	0.00%	0	0.00%		

TABLE:24 .ASSOCIATION FOR DEMOGRAPHIC VARIABLE ABD ANXIETY FOR DM

		HAMA											
		Not Present		Mild		Mild to moderate		Moderate to		Severe			
		No	%	No	%	No	%	No	%	No	%		
SEX	Male	34	87.20%	11	35.50%	5	83.30%	4	100.00%	0	0.00%	23.981*	p<0.001
	Female	5	12.80%	20	64.50%	1	16.70%	0	0.00%	0	0.00%		
EDUCATION	Illiterate	3	7.70%	1	3.20%	0	0.00%	1	25.00%	0	0.00%	45.106*	p<0.001
	Primary School	8	20.50%	6	19.40%	2	33.30%	0	0.00%	0	0.00%		
	Middle school	12	30.80%	12	38.70%	2	33.30%	0	0.00%	0	0.00%		
	High school	10	25.60%	7	22.60%	1	16.70%	1	25.00%	0	0.00%		
	UG	6	15.40%	5	16.10%	1	16.70%	0	0.00%	0	0.00%		
	PG	0	0.00%	0	0.00%	0	0.00%	2	50.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	32	82.10%	24	77.40%	4	66.70%	3	75.00%	0	0.00%	0.844	0.839
	Joint	7	17.90%	7	22.60%	2	33.30%	1	25.00%	0	0.00%		
SES	Low	22	56.40%	17	54.80%	4	66.70%	2	50.00%	0	0.00%	0.354	0.95
	Middle	17	43.60%	14	45.20%	2	33.30%	2	50.00%	0	0.00%		
	Upper	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
INCOME	< Rs 5000	22	56.40%	17	54.80%	4	66.70%	2	50.00%	0	0.00%	7.747	0.257
	Rs5000- Rs 10000	17	43.60%	11	35.50%	1	16.70%	1	25.00%	0	0.00%		
	More than Rs 10000	0	0.00%	3	9.70%	1	16.70%	1	25.00%	0	0.00%		
RESIDENCE	Urban	27	69.20%	22	71.00%	4	66.70%	1	25.00%	0	0.00%	3.519	0.318
	Rural	12	30.80%	9	29.00%	2	33.30%	3	75.00%	0	0.00%		

*. The Chi-square statistic is significant at the .05

TABLE:25 .ASSOCIATION FOR DEMOGRAPHIC VARIABLE ABD ANXIETY FOR NORMAL

		HAMA											
		Not Present		Mild		Mild to moderate		Moderate to		Severe			
		N0	Column	N0	Column	N0	Column	N0	Column	N0	Column		
SEX	Male	49	75.40%	4	36.40%	0	0.00%	1	100.00%	0	0.00%	13.416*	0.004
	Female	16	24.60%	7	63.60%	3	100.00%	0	0.00%	0	0.00%		
EDUCATION	Illiterate	4	6.20%	3	27.30%	2	66.70%	0	0.00%	0	0.00%	26.79*	0.03
	Primary	11	16.90%	0	0.00%	1	33.30%	0	0.00%	0	0.00%		
	Middle	19	29.20%	6	54.50%	0	0.00%	0	0.00%	0	0.00%		
	High school	16	24.60%	2	18.20%	0	0.00%	0	0.00%	0	0.00%		
	UG	12	18.50%	0	0.00%	0	0.00%	1	100.00%	0	0.00%		
	PG	3	4.60%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	51	78.50%	8	72.70%	1	33.30%	1	100.00%	0	0.00%	3.614	0.306
	Joint	14	21.50%	3	27.30%	2	66.70%	0	0.00%	0	0.00%		
SES	Low	30	46.20%	10	90.90%	2	66.70%	0	0.00%	0	0.00%	9.186	0.163
	Middle	32	49.20%	1	9.10%	1	33.30%	1	100.00%	0	0.00%		
	Upper	3	4.60%	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
INCOME	< Rs 5000	30	46.20%	10	90.90%	2	66.70%	0	0.00%	0	0.00%	23.038*	0.001
	Rs5000- Rs	31	47.70%	1	9.10%	1	33.30%	0	0.00%	0	0.00%		
	More than	4	6.20%	0	0.00%	0	0.00%	1	100.00%	0	0.00%		
RESIDENCE	Urban	49	75.40%	4	36.40%	1	33.30%	1	100.00%	0	0.00%	8.908*	0.031
	Rural	16	24.60%	7	63.60%	2	66.70%	0	0.00%	0	0.00%		

*significant at p <0.05

TABLE:26.(i) 1ASSOCIATION FOR DEMOGRAPHIC VARIABLE - QSF FOR DM

		QSFTOTAL									
		No		Mild		Moderate		Severe			
		No	%	No	%	No	%	No	%	chi square	p value
SEX	Male	26	74.30%	15	68.20%	9	56.20%	4	57.10%	2.005	0.571
	Female	9	25.70%	7	31.80%	7	43.80%	3	42.90%		
EDUCATION	Illiterate	2	5.70%	2	9.10%	0	0.00%	1	14.30%	17.707	0.278
	Primary School	4	11.40%	7	31.80%	4	25.00%	1	14.30%		
	Middle school	8	22.90%	6	27.30%	9	56.20%	3	42.90%		
	High school	12	34.30%	4	18.20%	1	6.20%	2	28.60%		
	UG	7	20.00%	3	13.60%	2	12.50%	0	0.00%		
	PG	2	5.70%	0	0.00%	0	0.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	32	91.40%	14	63.60%	11	68.80%	6	85.70%	7.524	0.057
	Joint Family	3	8.60%	8	36.40%	5	31.20%	1	14.30%		
SES	Low	16	45.70%	14	63.60%	10	62.50%	5	71.40%	2.976	0.395
	Middle	19	54.30%	8	36.40%	6	37.50%	2	28.60%		
	Upper	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
INCOME	< Rs 5000	16	45.70%	14	63.60%	10	62.50%	5	71.40%	4.113	0.661
	Rs5000- Rs 10000	17	48.60%	6	27.30%	5	31.20%	2	28.60%		
	More than Rs	2	5.70%	2	9.10%	1	6.20%	0	0.00%		
RESIDENCE	Urban	24	68.60%	15	68.20%	11	68.80%	4	57.10%	0.377	0.946
	Rural	11	31.40%	7	31.80%	5	31.20%	3	42.90%		

TABLE: 26.(ii)ASSOCIATION FOR DEMOGRAPHIC VARIABLE AND QSF FOR NORMAL PATIENTS

		QSFTOTAL									
		No		Mild		Moderate		Severe			
		No	%	No	%	No	%	No	%	chi square	p value
SEX	Male	46	76.70	5	62.50%	3	30.00%	0	0.00%	12.953*	0.005
	Female	14	23.30	3	37.50%	7	70.00%	2	100.00%		
EDUCATION	Illiterate	3	5.00%	1	12.50%	4	40.00%	1	50.00%	21.161	0.118
	Primary	9	15.00	2	25.00%	0	0.00%	1	50.00%		
	Middle school	20	33.30	3	37.50%	2	20.00%	0	0.00%		
	High school	15	25.00	2	25.00%	1	10.00%	0	0.00%		
	UG	11	18.30	0	0.00%	2	20.00%	0	0.00%		
	PG	2	3.30%	0	0.00%	1	10.00%	0	0.00%		
	Professional	0	0.00%	0	0.00%	0	0.00%	0	0.00%		
FAMILY	Nuclear	46	76.70	7	87.50%	6	60.00%	2	100.00%	2.646	0.449
	Joint Family	14	23.30	1	12.50%	4	40.00%	0	0.00%		
SES	Low	31	51.70	4	50.00%	6	60.00%	1	50.00%	2.114	0.909
	Middle	27	45.00	4	50.00%	3	30.00%	1	50.00%		
	Upper	2	3.30%	0	0.00%	1	10.00%	0	0.00%		
INCOME	< Rs 5000	31	51.70	4	50.00%	6	60.00%	1	50.00%	1.489	0.96
	Rs5000- Rs	25	41.70	4	50.00%	3	30.00%	1	50.00%		
	More than Rs	4	6.70%	0	0.00%	1	10.00%	0	0.00%		
RESIDENCE	Urban	43	71.70	5	62.50%	6	60.00%	1	50.00%	1.067	0.785
	Rural	17	28.30	3	37.50%	4	40.00%	1	50.00%		

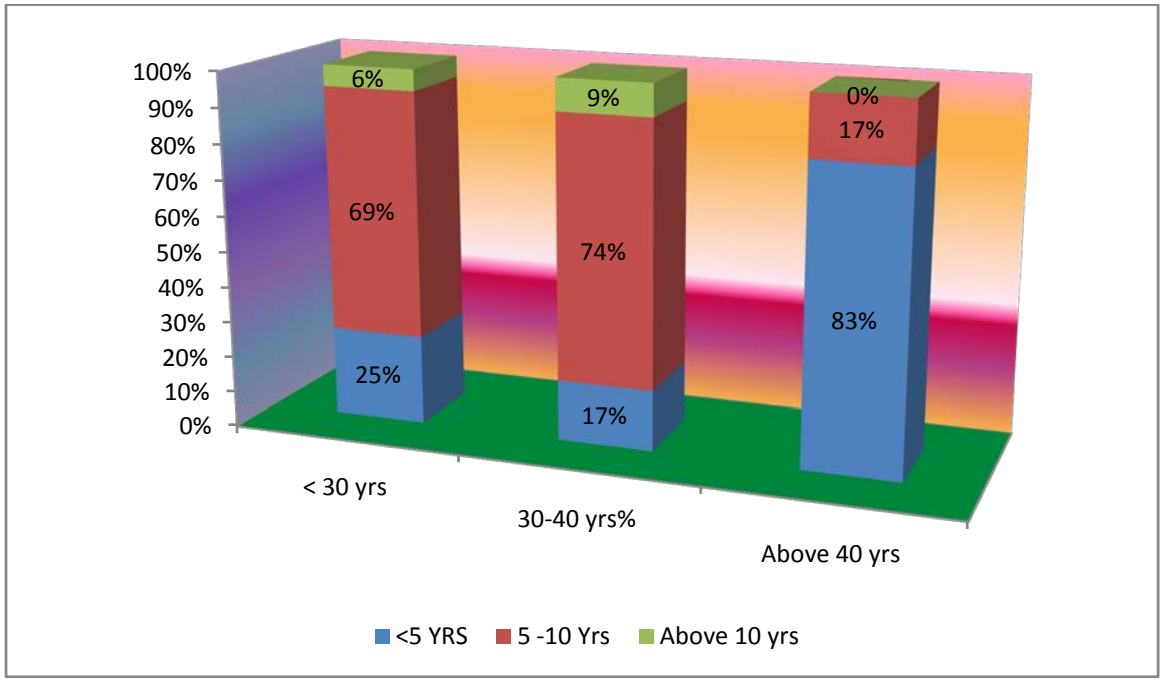
*significant at p <0.05

The above tables explained the various demographic variables of both in case and control groups in association with depression, anxiety and the QSF total and significance with chi – Square value, significant p – value .

TABLE – 27. ASSOCIATION OF DURATION AND AGE OF ONSET

ASSOCIATION OF DURATION OF T2DM AND AGE OF ONSET								
			age onset			Total	Chi square	P value
			<30 Yrs	30-40 Yrs	Above 40Yrs			
Duration	< 5 yrs	N0	4	10	5	19	13.207[a]	.P<0.05
		%	25.0%	17.2%	83.3%	23.8%		
	5-10 Yrs	N0	11	43	1	55		
		%	68.8%	74.1%	16.7%	68.8%		
	Above 10 Yrs	N0	1	5	0	6		
		%	6.2%	8.6%	0.0%	7.5%		
Total		N0	16	58	6	80		
		%	100.0%	100.0%	100.0%	100.0%		

GRAPH – 22, DURATION OT T2DM AND AGE OF ONEST

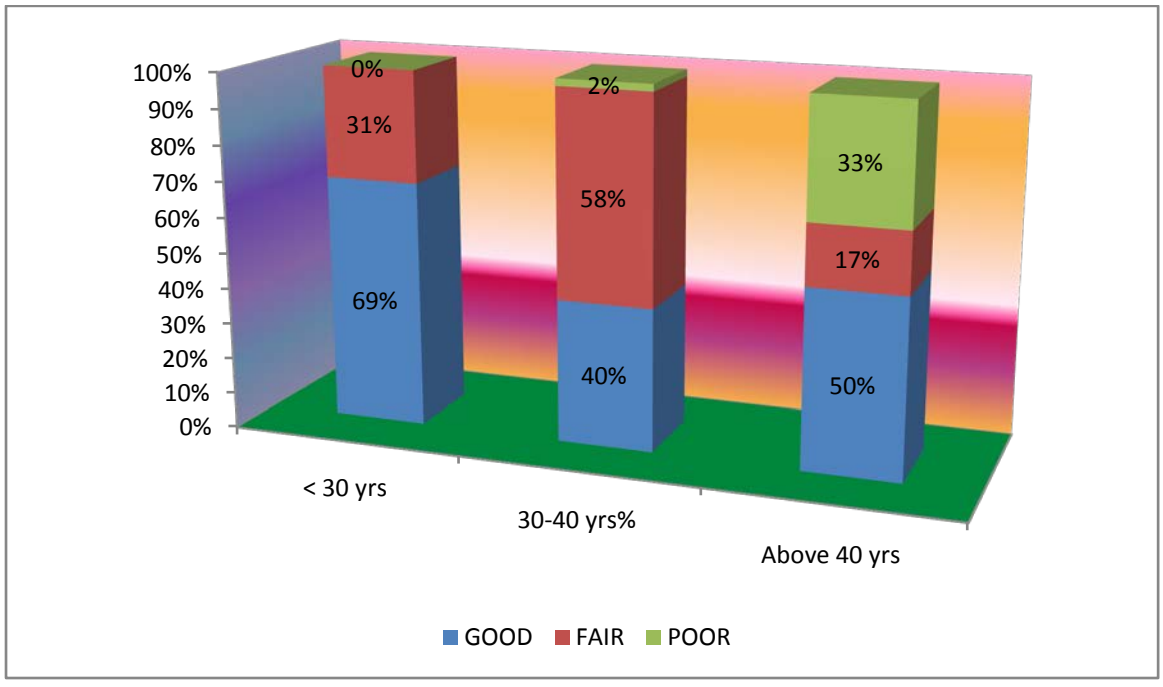


Most of the cases, reported in 30 – 40 years.

TABLE -28.

ASSOCIATION OF GLYCEMIC CONTROL WITH AGE OF ONSET								
			age onset			Total		
			<30 Yrs	30-40 Yrs	Above 40Yrs		Chi square	P value
glycemic control	Good	N0	11	23	3	37		
		%	68.8%	39.7%	50.0%	46.2%	20.873[a]	P<0.001
	Fair	N0	5	34	1	40		
		%	31.2%	58.6%	16.7%	50.0%		
	Poor	N0	0	1	2	3		
		%	0.0%	1.7%	33.3%	3.8%		
Total		N0	16	58	6	80		
		%	100.0%	100.0%	100.0%	100.0%		

GRAPH – 23, GLYCEMIC CONTROL AND AGE OF ONSET.



Most of the cases had a fair glycemic control, earlier onset had fair glycemic control.

TABLE -29 (i).

ROLE OF SEXUALITY WITH QSF TOTAL IN T2DM									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
ROLE_OF_SEXUALITY	Less important	N0	7	15	10	5	37		
		%	20.0%	68.2%	62.5%	71.4%	46.2%		
	More important	N0	28	7	6	2	43		
		%	80.0%	31.8%	37.5%	28.6%	53.8%	17.443[a]	.001
Total		N0	35	22	16	7	80		
		%	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %		

TABLE – 29 (ii).

ROLE OF SEXUALITY WITH QSF TOTAL IN CONTROLS									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
ROLE_OF_SEXUALITY	Less important	N0	27	6	9	1	43		
		%	45.0%	75.0%	90.0%	50.0%	53.8%		
	More important	N0	33	2	1	1	37	8.598[a]	P<0.05
		%	55.0%	25.0%	10.0%	50.0%	46.2%		
Total		N0	60	8	10	2	80		
		%	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %		

Role of sexuality had an impact on quality of sexual function in both cases (Chi square; 17.433, p – value ; 0.001) and in control (Chi;8.598, p; <0.05).

TABLE – 30 (i).

MENOPAUSE STATUS WITH QSF TOTAL IN T2DM									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
MENOPAUSE_STATUS	No	Count	35	20	12	7	74		
		% within QSFTOTAL	100.0%	90.9%	75.0%	100.0%	92.5%		
	Yes	Count	0	2	4	0	6	10.549	P<0.001
		% within QSFTOTAL	0.0%	9.1%	25.0%	0.0%	7.5%		
Total		Count	35	22	16	7	80		
		% within QSFTOTAL	100.0%	100.0%	100.0%	100.0%	100.0%		

TABLE – 30 (ii).

MENOPAUSE STATUS WITH QSF TOTAL IN CONTROL									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
MENOPAUSE_STATUS	No	Count	59	7	6	2	74		
		% within QSFTOTAL	98.3%	87.5%	60.0%	100.0%	92.5%	18.619	P<0.001
	Yes	Count	1	1	4	0	6		
		% within QSFTOTAL	1.7%	12.5%	40.0%	0.0%	7.5%		
Total		Count	60	8	10	2	80		
		% within QSFTOTAL	100.0%	100.0%	100.0%	100.0%	100.0%		

TABLE – 31 (i).

PSYCHO SOMATIC QoL WITH QSF TOTAL IN T2DM									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
PSYCHO_SOMATIC_QOL	No	N0	14	4	2	0	20		
		%	40.0%	18.2%	12.5%	0.0%	25.0%		
	Mild	N0	16	5	3	1	25		
		%	45.7%	22.7%	18.8%	14.3%	31.2%		
	Moderate	N0	5	10	4	0	19		
		%	14.3%	45.5%	25.0%	0.0%	23.8%		
	Severe	N0	0	3	7	6	16		
		%	0.0%	13.6%	43.8%	85.7%	20.0%		
Total		N0	35	22	16	7	80	45.037[a]	P<0.001
		%	100.0%	100.0%	100.0%	100.0%	100.0%		

TABLE – 31 (ii).

PSYCHO SOMATIC QoL WITH QSF TOTAL IN CONTROL									
			QSFTOTAL				Total		
			No	Mild	Moderate	Severe		**Chi-Square**	P Value
PSYCHO_SOMATIC_QOL	No	N0	42	0	1	0	43		
		%	70.0%	0.0%	10.0%	0.0%	53.8%		
	Mild	N0	12	5	0	1	18		
		%	20.0%	62.5%	0.0%	50.0%	22.5%		
	Moderate	N0	5	2	4	1	12		
		%	8.3%	25.0%	40.0%	50.0%	15.0%	51.963[a]	P<0.001
	Severe	N0	1	1	5	0	7		
		%	1.7%	12.5%	50.0%	0.0%	8.8%		
Total		N0	60	8	10	2	80		
		%	100.0%	100.0%	100.0%	100.0%	100.0%		

Association of psycho somatic quality of life and QSF shows that, both in T2DM patients and in control group had significant p – values; < 0.00

TABLE – 32, PERCENTAGE COMPARISION .		group_1_type_2_dm_2_no_dm			
		type 2 dm		Normal	
		Count	Column N %	Count	Column N %
age_group	31 -35 Yrs	16	20.00%	16	20.00%
	36-40 Yrs	19	23.75%	19	23.75%
	41-45 Yrs	22	27.50%	22	27.50%
	45-50 Yrs	23	28.75%	23	28.75%
SEX	Male	54	67.50%	54	67.50%
	Female	26	32.50%	26	32.50%
EDUCATION	Illiterate	5	6.25%	9	11.25%
	Primary School	16	20.00%	12	15.00%
	Middle school	26	32.50%	25	31.25%
	High school	19	23.75%	18	22.50%
	UG	12	15.00%	13	16.25%
	PG	2	2.50%	3	3.75%
	Professional	0	0.00%	0	0.00%
RELIGION	Hindu	59	73.75%	61	76.25%
	Christian	14	17.50%	12	15.00%
	Muslim	7	8.75%	7	8.75%
	Others	0	0.00%	0	0.00%
FAMILY	Nuclear	63	78.75%	61	76.25%
	Joint Family	17	21.25%	19	23.75%
SES	Low	45	56.25%	42	52.50%
	Middle	35	43.75%	35	43.75%
	Upper	0	0.00%	3	3.75%
INCOME	< Rs 5000	45	56.25%	42	52.50%
	Rs5000- Rs 10000	30	37.50%	33	41.25%

	More than Rs 10000	5	6.25%	5	6.25%
MARITAL_STATUS	Married	80	100.00%	80	100.00%
	Unmarried	0	0.00%	0	0.00%
	separated	0	0.00%	0	0.00%
	Widow/divorced	0	0.00%	0	0.00%
OCCUPATION	Unemployed	16	20.00%	12	15.00%
	Unskilled	3	3.75%	2	2.50%
	Semi skilled	14	17.50%	18	22.50%
	Skilled	12	15.00%	13	16.25%
	Farmer	32	40.00%	29	36.25%
	Semi professional	3	3.75%	5	6.25%
	Professional	0	0.00%	1	1.25%
RESIDENCE	Urban	54	67.50%	55	68.75%
	Rural	26	32.50%	25	31.25%
glycemic control	.00	0	0.00%	80	100.00%
	Good	37	46.25%	0	0.00%
	Fair	40	50.00%	0	0.00%
	Poor	3	3.75%	0	0.00%
BDI_	Normal	38	47.50%	66	82.50%
	Mild	30	37.50%	9	11.25%
	Border line depression	6	7.50%	3	3.75%
	Moderate	6	7.50%	2	2.50%
	severe	0	0.00%	0	0.00%
	Extreme	0	0.00%	0	0.00%
HAMA	Not Present	39	48.75%	65	81.25%
	Mild	31	38.75%	11	13.75%
	Mild to moderate	6	7.50%	3	3.75%

	Moderate to severe	4	5.00%	1	1.25%
	Severe	0	0.00%	0	0.00%
MENOPAUSE_STATUS	No	74	92.50%	74	92.50%
	Yes	6	7.50%	6	7.50%
SEXUAL_PARTNER	No	0	0.00%	0	0.00%
	Yes	80	100.00%	80	100.00%
SEXUAL_CONTACTSLAST_MONTH	No	20	25.00%	12	15.00%
	Yes	58	72.50%	64	80.00%
	Missing	2	2.50%	4	5.00%
SEXUAL_PARTNERHOWLONG	>10 Years	60	75.00%	64	80.00%
	7-10 Yrs	19	23.75%	15	18.75%
	4-6 Yrs	1	1.25%	1	1.25%
	1- 3 Yrs	0	0.00%	0	0.00%
	6-12 months	0	0.00%	0	0.00%
	<6 months	0	0.00%	0	0.00%
	no sex	0	0.00%	0	0.00%
ROLE_OF_SEXUALITY	Less important	37	46.25%	43	53.75%
	More important	43	53.75%	37	46.25%
	Very Important	0	0.00%	0	0.00%
PSYCHO_SOMATIC_QOL	No	20	25.00%	43	53.75%
	Mild	25	31.25%	18	22.50%
	Moderate	19	23.75%	12	15.00%
	Severe	16	20.00%	7	8.75%
SEXUAL_ACTIVITY	No	17	21.25%	34	42.50%
	Mild	13	16.25%	19	23.75%
	Moderate	9	11.25%	11	13.75%
	Severe	41	51.25%	16	20.00%

SEXUAL_DYSFUNCTIONSELF_VIEW	No	22	27.50%	42	52.50%
	Mild	20	25.00%	17	21.25%
	Moderate	21	26.25%	16	20.00%
	Severe	17	21.25%	5	6.25%
SEXUAL_DYSFUNCTIONPARTNER_VIEW	No	19	23.75%	44	55.00%
	Mild	13	16.25%	9	11.25%
	Moderate	19	23.75%	12	15.00%
	Severe	29	36.25%	15	18.75%
QSFTOTAL	No	35	43.75%	60	75.00%
	Mild	22	27.50%	8	10.00%
	Moderate	16	20.00%	10	12.50%
	Severe	7	8.75%	2	2.50%

DISCUSSION:

DISCUSSION:

In this study, our 1st hypothesis was the prevalence of depression is more among type 2 diabetic patients than age matched non – diabetic individuals.

This study showed that the prevalence of depression among T2DM patients is three times than the non – diabetic general population. Among 80 type 2 diabetic patients 42 patients had the symptoms of depression (52.5%), and among the control group 14 individuals (17.5%) had symptoms of depression in varying severity.

Among 42 type 2 diabetic patients with depression, 30 patients (37.5%) had mild depression,6 patients (7.5%) had borderline depression, and 6 patients (7.5%) had moderate depression, and among 14 non – diabetic individuals, 9 individuals(11.2%) had mild depression, 3 individuals (3.8%) had borderline depression and 2 individuals (2.5%) had moderate depression. These results shows that more than three times increased prevalence of depression present among T2DM patients than non – diabetic general population with a p – value; 0.000, (Statistically significant), Odds Ratio for Group (case / control) = 5.21, 95% Confidence Interval (.093, .396) Pearson Chi squre;21.846, df;3, which implies that depression symptoms among T2DM patients are 5.2 times higher than the non – diabetic general population.

These results correlates with the previous studies of Ali S *et al*, 2006, and Anderson *et al*, 2001, in which, the prevalence rate of depression among diabetic patients was more than 2 – 3 times than non – diabetic individuals.

Also, among 26 type 2 diabetic women participated in this study 15 women(57.7%) had depression, and among the diabetic men (n=54), 27 diabetic patients (50%) had depression. These results correlates with the previous studies of Nanjundappa G *et al*, 1986, Nichols *et al*, 2003, Goldney RD *et al*, 2004, and Shaban *et al*, 2006, showed that an increased prevalence of depression among type 2 diabetic women than type 2 diabetic men.

The socio – demographic factors significantly influences the occurrence of depression in type 2 diabetic patients. (3^{rd} hypothesis).

About the educational status, among 5 illiterate type 2 diabetic patients3 had depression symptoms (7.1%), primary school level; 11 patients (26.2%),Middle school level; 10 patients (23.8%), High school level; 12 patients (28.6%), Under graduate level; 6 patients (14.3%), and in the Profession level nil patients reported. (Chi – Square;6.968^{a}, df;5)

In the control group, illiterate 3 patients (21.4%), Primary school; 4 patients (28.6%), middle school; 3 patients (21.4%), high school; 1 patient (7.1%), UG level; 2 patients (14.3%), Professional; 1 patient (7.1%) were reported as had depression symptoms or varying degree.(Chi – Square;6.510^{b}, df;5).These results showed the association of low education and depression as already demonstrated by Anne Ergum *et al*, 2005.

In the Socio Economic Status (SES), among type 2 diabetic patients lower SES class had depression symptoms in 25 patients (59.5%), and in middle SES class 17 patients (40.5%), and in the non – diabetic individuals lower SES; 7 Patients (50%), middle SES; 6 patients (17.1%), and in upper SES; 1 patient (7.1%) had depression symptoms. (Chi – Square case;0.385, control; 0.544).

About the income status, income less than Rs. 5000 participated more in this study both in case and control groups (cases; 45 - 56.2% , controls; 42 – 52.5%). Among these 25 type 2 diabetic patients (59.5%) had depressive symptoms; and in the control group, 7 individuals (50%) had depressive symptoms. These results shows that income is a significant factor in the causation of depression. Chi – Square; 0.691, df; 2.

About the residence, the participants in the urban region was 54 (67.5%) in case group, 55 (68.75%) in control group, and in the rural region was 26 (32.5%) in case group, 25 (31.25%) in the control group. Among 54 type 2 diabetic patients in the urban region, 27 patients had depressive features (50%), and among 26 type 2 diabetic patients in the rural region 15 patients had depressive symptoms (57.7%).

In concern with the 2nd hypothesis of increased prevalence of anxiety among T2DM patients, than non – diabetic individuals also correlates with this study.

This study showed that the prevalence of anxiety among T2DM patients is more than 3 times than the non – diabetic general population. In this study also, among 80 type 2 diabetic patients 41 patients had the symptoms of anxiety (51.25%), and among the control group 15 individuals (18.75%) had symptoms of depression in varying severity.

Among 41 type 2 diabetic patients with anxiety, 31 patients (38.8%) had mild anxiety,6 patients (7.5%) had mild to moderate anxiety, and 4 patients (5.0%) had moderate anxiety, and among 15 non – diabetic individuals, 11 individuals(13.8%) had mild anxiety, 3 individuals (3.8%) had mild to moderate anxiety, and 1 individuals(1.2%) had moderate anxiety. These results correlates with the previous studies of Hermanns *et al*, 2005, Janet Thomas *et al*, 2003 reported that an increased prevalence of anxiety among type 2 diabetic patients. (Chi – squre;13.434, p – value;<0.001). Odds ratio; 4.12; implies that anxiety symptoms among type 2 diabetic patients are 4.12 times more than non – diabetic individuals.

Also, among 26 type 2 diabetic women participated in this study 21 women (80.7%) had anxiety symptoms of varying degree, and among 54 type 2 diabetic men (n=54), 20 diabetic patients (37.03%) had anxiety symptoms. These results also similar that of previous studies by Grigsby *et al*, 2002, Hermanns *et al*, 2005, Shaban *et al*, 2006, Fisher *et al*, 2008.

The socio – demographic factors also influences significantly in the occurrence of anxiety symptoms in type 2 diabetic patients. (3rd hypothesis)

In concern with the education level, both in T2DM patients and in the non – diabetic individuals group, low education plays an important role the causation of anxiety. Education level up to middle school groups had more anxiety symptoms (Cases; 14 (34.1%), controls; 6 (40%). These results correlates with the previous study by Janet Thomas *et al*, 2003.

In the Socio Economic status, low socio economic status group both in case and control group had significant increased risk of anxiety symptoms (Case; 56.1%), Control; 80%). These results shows that, low economic status plays a vital role in the production of anxiety features.

About the income, more anxiety symptoms present among income less than Rs.5000, both in type 2 diabetic patients and in the control group. Among 45 T2DM patients in this income group, 23 patients had varying degrees of anxiety symptoms (51.1%), and in the control group, among 42 individuals only 12 had anxiety symptoms (28.6%).

About the residence, the participants in the urban region was 54 (67.5%) in case group, 55 (68.75%) in control group, and in the rural region was 26 (32.5%) in case group, 25 (31.25%) in the control group. Among 54 type 2 diabetic patients in the urban region, 27 patients had anxiety symptoms (50%), and among 26 type 2 diabetic patients in the rural region 14 patients had anxiety symptoms (53.8%).

These results shows that, the predicting factors of socio economic status, education, age, sex, and income were significantly associated with depression and as well as with anxiety, which was already demonstrated by Edede *et al*, 2003, Nichols *et al*, 2003, and Goldney RD *et al*, 2004.

In concern with the association of duration and age of onset of T2DM most of the cases had diabetes in the 30 -40 years. (Chi – Square;13.207, p- value; 0.05).

In the 4th hypothesis of the Quality of Sexual Function, 56.2% (n=45) of the T2DM patients had sexual dysfunction in varying degrees. Among 45 patients of T2DM, 22 patients had mild degree of sexual dysfunction (27.5%), 16 patients had moderate degree of sexual dysfunction (20%), and 7 patients had severe degree (8.8%). In the control group, only 25% (n= 20) of the individuals had varying degrees of sexual dysfunction, among them mild; 8 (10%), moderate; 10 (12.5%), and severe; 2 (2.5%). Odds ratio; 3.85, p- value 0.001 implies statistically significant; i.e. in type 2 diabetic patients sexual dysfunction is more than 3.85 times than non – diabetic general population.

In the psycho – somatic quality of life, 75% (n=60) of the type 2 diabetic patients had complaints or problems in this domain, where as in non – diabetic control group only 46.2% (n=37) . Among 60 T2DM patients, milder degree; 25 (31.2%), moderate degree; 19 (23.8%), and the severe degree; 16 (20%), and in the control group mild; 18 (22.5%), moderate; 12 (15%), and the severe; 7 (8.8%) were reported. p – value; 0.002. Significant.

Odds ratio; 3.486; implies that Psycho – somatic quality of life among T2DM patients is 3.5 times affected more, than with non – diabetic individuals.

In the sexual activity, 78.8% (n=63) of the T2DM patients had complaints or problems in this domain, where as in non – diabetic control group only 57.5% (n=46) . Among 63 T2DM patients, milder degree; 13 (16.2%), moderate degree; 9 (11.2%), and the severe degree; 41 (51.2%), and in the control group mild; 19 (23.8%), moderate; 11(13.8%), and the severe; 16 (20%) were reported. p – value; <0.005. Significant. Odds ratio; 2.74; implies that sexual activity among T2DM patients is 2.74 times affected more, than with non – diabetic individuals.

In the sexual (dys) function self – view, 72.5% (n=58) of the type 2 diabetic patients had complaints or problems in this domain, where as in non – diabetic control group only 47.5% (n=38) . Among 58 T2DM patients, milder degree; 20 (25%), moderate degree; 21 (26.2%), and the severe degree; 17 (21.2%), and in the control group mild; 17 (21.2%), moderate; 16(20%), and the severe; 5 (6.2%) were reported. p – value; <0.005. Significant. Odds ratio; 2.91; implies that sexual (dys) function self – view among T2DM patients is 2.9 times affected more, than with non – diabetic general population.

In the sexual (dys)function partner – view, 76.2% (n=61) of the type 2 diabetic patients had complaints or problems in this domain, where as in non – diabetic control group only 45% (n=36) . Among 61 T2DM patients, milder degree; 13 (16.2%), moderate degree; 19 (23.28%), and the severe degree; 29 (36.2%), and in the control group mild; 9 (11.2%), moderate; 12(15%), and the severe; 15 (18.8%) were reported. p – value; <0.005.

Significant. Odds ratio; 3.92; implies that sexual (dys) function partner – view among T2DM patients is 3.9 times affected more, than with non – diabetic general population.

In concern with the 5th hypothesis of Role of sexuality and menopause in association with QSF total score, in type 2 diabetic patients the Role of Sexuality Chi – square value; 17.443, p – value; 0.001, the menopause status Chi – square value; 10.549, p – value;< 0.001, which is statistically significant. Also, in the control group, the Role of sexuality had Chi – Square value; 8.598, p – value; < 0.05, and the menopause status Chi – square value was 18.619, p- value;< 0.001, which implies that, role of sexuality and menopause status were significantly impair the quality of sexual function.

In addition to these results, among 160 participants 29 had both depression and anxiety symptoms (18%). Among these 29, 23 were T2DM (79%), and remaining 6 were non – diabetic general population (21%). Odds ratio; 4.97, which implies that, presence of both anxiety and depression symptoms among T2DM patients was 5 times higher than non – diabetic general population.

CONCLUSION

CONCLUSION:

1. The prevalence of depression in T2DM patients is 3 to 5 times higher than the non – diabetic individuals i.e. General population.

2. The prevalence of anxiety symptoms in T2DM patients is 2 to 3 times higher than with non – diabetic individuals (General population).

3.The socio – demographic factors like socio economic status, income, education, age, sex and the residence are significantly associated with the causation of depression and anxiety among type 2 diabetic patients.

4. The quality of sexual function is significantly affected among T2DM patients, which is 3- 4 times more than with non – diabetic individuals.

5. The psycho – somatic quality of life is 3.5 times affected more in T2DM patients than the non – diabetic individuals.

6. The Role of sexuality and the menopause status are significantly affects the quality of sexual function both in diabetic patients and in non – diabetic individuals, but affects more in T2DM patients.

7. The presence of both anxiety and depression symptoms among T2DM patients was 5 times higher than non – diabetic general population.

LIMITATIONS

LIMITATIONS OF THE STUDY

1. Only a small number of samples (80 Cases, 80 Controls) were participated in this study.

2. The study was done at a single point of time, which prevents episodic nature of depression and anxiety symptom evaluation.

3. The complications of diabetes excluded in this study, because of confounding factors, because of that the severe and extreme degrees of depression and anxiety symptoms not reported in this study. So, a study with complications may yield an exact results.

4. Since, this is a comparative study, particular population residing near to this hospital only participated in this study. A large community based study including various population is needed to evaluate the sexual dysfunction.

5. Even though the complete review of OP records regarding the glycemic control, the best indicator of glycemic control like HbA1C level did not available for this study.

RECOMMENDATIONS.

1. This study shows that, an increased rate of depression, anxiety and sexual dysfunction among type 2 diabetic patients. So, it is recommended that every type 2 diabetic individual must need consultation liaison psychiatry to identify any psychiatric illness, to prevent or postpone their complications, since both mutually worsen each other.

2. This study shows that, the quality of sexual function is significantly affected in every another patient in type 2 diabetes, even without any complications. So, it is mandatory to do a Psycho sexual evaluation to prevent marital disharmony and it's related events.

3. Further, a large population study is needed to evaluate the sexual dysfunction among diabetic patients in a community set up, to obtain an exact results.

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ANNEXURES

PROFORMA

DEMOGRAPHIC FACTORS

Name:

Age: 31-35, 36-40, 41-45, 46-50 Years.

Sex: (1).Male (2).Female

Education: (1). Illiterate (2). Primary-school (3).Middle-school (4).High-school (5).Under-graduate (6). Post-graduate (7). Professional.

Religion: (1).Hindu. (2). Christian. (3). Muslim. (4). Others.

Family: (1). Nuclear. (2). Joint family.

Socio-Economic status: (1). Lower SES. (2). Middle SES. (3). Upper SES.

Income: (1).Rs: less than 5000, (2).Rs: 5000-10000, (3).Rs: more than 10000.

Marital status: (1). Married. (2). Un married. (3). Married-seperated (4).Widowed.

Occupation: (1). Un-employed (2). Un skilled worker (3). Semi-skilled worker (4). Skilled worker (5).Farmer, clerical, self employed (6).Semi-profession (7).Profession.

Residence: (1). Urban (2). Rural

DISEASE FACTORS:

1. Age of onset:

2. Duration of Diabetes: Minimum 6 months

3. Glycemic control in past 6 months: (1). Good (2). Fair (3).Poor.

4. Presence of complications: (0). Absent (1).Present.

5. BDI score:

0-10: These ups and down are considered normal (0)

11-16: Mild mood disturbance (1)

17-20: Border line clinical depression (2)

21-30: Moderate depression (3)

31-40: Severe depression (4)

Over 40: Extreme depression (5).

6. HAM-A Score:

Not present (0)

<17: Mild severity(1)

18-24: Mild to moderate severity(2)

25-30: Moderate to severe(3)

>30: Severe.(4)

7. Menopause Status: (0). No (1). Yes.

8. Sexual Partner: (0). No (1). Yes.

9. Sexual Contact During Last Month: (0). No (1). Yes (2). Missing.

10. Sexual Partner For How Long:

>10 Years: (1)

7-10 Years: (2)

4-6 Years: (3)

1-3 Years: (4)

6-12 Months: (5)

<6 Months: (6)

No Sex: (7)

11.Role of Sexuality:

Less Important: (1)

More Important: (2)

Very Important: (3)

12. QSF: Psycho Somatic QoL:

≤ 15: No, Little (0)

16-24: Mild (1)

25-34: Moderate (2)

≥35: Severe (3).

Sexual Activity Level:

≤ 17: No, Little (0)

18-23: Mild (1)

24-26: Moderate (2)

≥27: Severe (3).

Sexual (Dys) Function - Self View:

≤ 9: No, Little (0)

10-15: Mild (1)

16-19: Moderate (2)

≥20: Severe (3).

Sexual (Dys) Function - Partner View:

≤ 5: No, Little (0)

6-8: Mild (1)

9-11: Moderate (2)

≥12: Severe (3).

QSF – Total Score:

≤ 54: No, Little (0)

55-68: Mild (1)

69-79: Moderate (2)

≥80: Severe (3).

Beck's Depression Inventory

This depression inventory can be self-scored. The scoring scale is at the end of the questionnaire.

1.
- 0 I do not feel sad.
- 1 I feel sad
- 2 I am sad all the time and I can't snap out of it.
- 3 I am so sad and unhappy that I can't stand it.

2.
- 0 I am not particularly discouraged about the future.
- 1 I feel discouraged about the future.
- 2 I feel I have nothing to look forward to.
- 3 I feel the future is hopeless and that things cannot improve.

3.
- 0 I do not feel like a failure.
- 1 I feel I have failed more than the average person.
- 2 As I look back on my life, all I can see is a lot of failures.
- 3 I feel I am a complete failure as a person.

4.
- 0 I get as much satisfaction out of things as I used to.
- 1 I don't enjoy things the way I used to.
- 2 I don't get real satisfaction out of anything anymore.
- 3 I am dissatisfied or bored with everything.

5.
- 0 I don't feel particularly guilty
- 1 I feel guilty a good part of the time.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6.
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7.
- 0 I don't feel disappointed in myself.
- 1 I am disappointed in myself.
- 2 I am disgusted with myself.
- 3 I hate myself.

8.
- 0 I don't feel I am any worse than anybody else.
- 1 I am critical of myself for my weaknesses or mistakes.
- 2 I blame myself all the time for my faults.
- 3 I blame myself for everything bad that happens.

9.
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10.
- 0 I don't cry any more than usual.
- 1 I cry more now than I used to.
- 2 I cry all the time now.
- 3 I used to be able to cry, but now I can't cry even though I want to.

11.

0	I am no more irritated by things than I ever was.
1	I am slightly more irritated now than usual.
2	I am quite annoyed or irritated a good deal of the time.
3	I feel irritated all the time.

12.

0	I have not lost interest in other people.
1	I am less interested in other people than I used to be.
2	I have lost most of my interest in other people.
3	I have lost all of my interest in other people.

13.

0	I make decisions about as well as I ever could.
1	I put off making decisions more than I used to.
2	I have greater difficulty in making decisions more than I used to.
3	I can't make decisions at all anymore.

14.

0	I don't feel that I look any worse than I used to.
1	I am worried that I am looking old or unattractive.
2	I feel there are permanent changes in my appearance that make me look unattractive
3	I believe that I look ugly.

15.

0	I can work about as well as before.
1	It takes an extra effort to get started at doing something.
2	I have to push myself very hard to do anything.
3	I can't do any work at all.

16.

0	I can sleep as well as usual.
1	I don't sleep as well as I used to.
2	I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3	I wake up several hours earlier than I used to and cannot get back to sleep.

17.

0	I don't get more tired than usual.
1	I get tired more easily than I used to.
2	I get tired from doing almost anything.
3	I am too tired to do anything.

18.

0	My appetite is no worse than usual.
1	My appetite is not as good as it used to be.
2	My appetite is much worse now.
3	I have no appetite at all anymore.

19.

0	I haven't lost much weight, if any, lately.
1	I have lost more than five pounds.
2	I have lost more than ten pounds.
3	I have lost more than fifteen pounds.

20.

0 I am no more worried about my health than usual.

1 I am worried about physical problems like aches, pains, upset stomach, or constipation.

2 I am very worried about physical problems and it's hard to think of much else.

3 I am so worried about my physical problems that I cannot think of anything else.

21.

0 I have not noticed any recent change in my interest in sex.

1 I am less interested in sex than I used to be.

2 I have almost no interest in sex.

3 I have lost interest in sex completely.

INTERPRETING THE BECK DEPRESSION INVENTORY

Now that you have completed the questionnaire, add up the score for each of the twenty-one questions by counting the number to the right of each question you marked. The highest possible total for the whole test would be sixty-three. This would mean you circled number three on all twenty-one questions. Since the lowest possible score for each question is zero, the lowest possible score for the test would be zero. This would mean you circles zero on each question. You can evaluate your depression according to the Table below.

Total Score_____Levels of Depression

1-10_____These ups and downs are considered normal
11-16_____ Mild mood disturbance
17-20_____Borderline clinical depression
21-30_____Moderate depression
31-40_____Severe depression
over 40_____Extreme depression

A PERSISTENT SCORE OF 17 OR ABOVE INDICATES THAT YOU MAY NEED MEDICAL TREATMENT. IF YOU HAVE ANY CARDIAC CONCERNS, PLEASE CONTACT CARDIOVASCULAR INTERVENTIONS, P.A. at 407-894-4880

Hamilton Anxiety Rating Scale (HAM-A)

Reference: **Hamilton M. The assessment of anxiety states by rating. Br J Med Psychol 1959; 32:50–55.**

Rating Clinician-rated

Administration time 10–15 minutes

Main purpose To assess the severity of symptoms of anxiety

Population Adults, adolescents and children

Commentary

The HAM-A was one of the first rating scales developed to measure the severity of anxiety symptoms, and is still widely used today in both clinical and research settings. The scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Although the HAM-A remains widely used as an outcome measure in clinical trials, it has been criticized for its sometimes poor ability to discriminate between anxiolytic and antidepressant effects, and somatic anxiety versus somatic side effects. The HAM-A does not provide any standardized probe questions. Despite this, the reported levels of inter-rater reliability for the scale appear to be acceptable.

Scoring

Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0–56, where <17 indicates mild severity, 18–24 mild to moderate severity and 25–30 moderate to severe.

Versions

The scale has been translated into: Cantonese for China, French and Spanish. An IVR version of the scale is available from Healthcare Technology Systems.

Additional references

Maier W, Buller R, Philipp M, Heuser I. The Hamilton Anxiety Scale: reliability, validity and sensitivity to change in anxiety and depressive disorders. J Affect Disord 1988;14(1):61–8.

Borkovec T and Costello E. Efficacy of applied relaxation and cognitive behavioral therapy in the treatment of generalized anxiety disorder. J Clin Consult Psychol 1993; 61(4):611–19

Address for correspondence

The HAM-A is in the public domain.

Quality of Sexual Function (QSF) Scale

- English version -

With increasing age, minor or major problems or even complaints occur frequently. This questionnaire deals with the aging of both females and males.
Which of the following statements describe your personal situation when considering the last month? Please, mark for each statement whether it applies to you or not, and if yes, to what extent. For symptoms that do not apply, please mark "NONE".

A. Below you will find a list of general symptoms. Please, mark for **each** of the statements whether it applies to you or not, and if yes, to what extent you are affected.

		Degree of intensity/ severity			
Description of impairments/symptoms	No, none	mild	moderate	severe	very severe
Coding	(1)	(2)	(3)	(4)	(5)
1. My feeling of general well-being has declined (physically or mentally).	☐	☐	☐	☐	☐
2. Pain in my chest has occurred.	☐	☐	☐	☐	☐
3. I have got heart discomfort at rest (unusual awareness of beating, racing, skipping, tightness).	☐	☐	☐	☐	☐
4. I sometimes have joint pain and muscular ache (lower back pain, joint pain, pain in a limb, general back ache).	☐	☐	☐	☐	☐
5. Unexpected episodes of sweating occur, sometimes also at night (without any previous physical or mental load).	☐	☐	☐	☐	☐
6. I suffer from feeling dizzy.	☐	☐	☐	☐	☐
7. Sometimes I have got sleep problems (difficulty in falling asleep or sleeping through, poor sleep, sleeplessness).	☐	☐	☐	☐	☐
8. Irritability and nervousness have increased (inner tension, inner restlessness, easily upset about little things, aggressiveness).	☐	☐	☐	☐	☐
9. Sometimes I am in a depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings).	☐	☐	☐	☐	☐
10. I feel physical exhaustion sometimes, and lacking vitality	☐	☐	☐	☐	☐
11. My memory and concentration are impaired.	☐	☐	☐	☐	☐
12. My muscular strength has clearly decreased.	☐	☐	☐	☐	☐
13. Sometimes I have got problems with urination.	☐	☐	☐	☐	☐

B. Many people are not happy with their sexual relations in general and with their sexual intercourse in particular. For this reason, we would like to ask you some even more private questions and to also ask you to tell us about your current situation, your desires, and your problems by marking the respective boxes. These questions refer to the last month.
If you answer the questions, please, do so totally openly and honestly – this questionnaire will be treated absolutely confidentially. However, if you are not willing to answer these questions, please leave the following part blank.

		Degree of intensity/severity				
Sexual function	No partner	NO	slightly	moderately	strongly	very strongly
Coding	(0)	(1)	(2)	(3)	(4)	(5)
14. Are you yourself *unhappy* with your common sexual life?		☐	☐	☐	☐	☐
15. Is your partner *unhappy* with your common sexual life?	☐	☐	☐	☐	☐	☐
16. Do you personally experience pain or other problems during sexual intercourse?	☐	☐	☐	☐	☐	☐
17. Does your partner experience pain or other problems during sexual intercourse?	☐	☐	☐	☐	☐	☐
18. Would you like to have sexual contacts more often?		☐	☐	☐	☐	☐
19. Does your partner wish for sexual intercourse more often than you do?	☐	☐	☐	☐	☐	☐
20. Does your partner wish for sexual intercourse less often than you do?	☐	☐	☐	☐	☐	☐
21. Has your desire for sexual activity (sexual intercourse or masturbation) ***de***creased?		☐	☐	☐	☐	☐
22. Has your desire for sexual activity (sexual intercourse or masturbation) ***in***creased?		☐	☐	☐	☐	☐
	No partner	No	rarely, little	moderately	often	very often
Coding	(0)	(1)	(2)	(3)	(4)	(5)
23. Do you often have sexual dreams, fantasies or desires?		☐	☐	☐	☐	☐
24. Does your partner have sexual dreams, fantasies or desires about you?	☐	☐	☐	☐	☐	☐
25. Do you frequently do sexual self-satisfaction (Masturbation)?		☐	☐	☐	☐	☐
26. Do you occasionally refuse sexual intercourse with your partner, though desired?	☐	☐	☐	☐	☐	☐
Coding	(0)	(5)	(4)	(3)	(2)	(1)
27. Do your sexual organs respond to sexual desires or dreams as usual?		☐	☐	☐	☐	☐
28. Do you take the initiative to have sexual intercourse with your partner?	☐	☐	☐	☐	☐	☐
29. Do you experience great sexual excitement before and during sexual intercourse?	☐	☐	☐	☐	☐	☐
30. Are you happy with your state of excitement before and during sexual intercourse?	☐	☐	☐	☐	☐	☐
31. Is sufficient moisture achieved during the entire sexual intercourse?	☐	☐	☐	☐	☐	☐
32. Do you reach full satisfaction during sexual activities (orgasm)?		☐	☐	☐	☐	☐

C. Now a few more general questions to better understand the above answers:

33. What is your gender? male ☐ female ☐
34. What is your age? ☐☐ years
35. What is your weight (kg)? ☐☐ kg
36. How tall are you? ☐,☐☐ meter

37. Did you have a partner for sexual relations last month?
No ☐ Yes ☐

38. If Yes:
Did you have sexual contacts last month?
No ☐ Yes ☐

39. For how long have you been intimate with your current partner?

No intimate intercourse ☐
less than 6 months ☐ 6-12 months ☐ 1 – 3 years ☐
4 – 6 years ☐ 7-10 years ☐ more than 10 years ☐

40. Does sexuality play an important role in your life?

less important ☐ important ☐ very important ☐

Thank You for Your Cooperation

The Quality of Sexual Function Scale (QSF): Evaluation Scheme

Once the QSF questionnaire is completed by the respondent, the following form can be used if a evaluation on paper is intended. However, we recommend a computerized evaluation.

The scoring scheme of the QSF scale is simple: The questionnaire has for each of the 32 item an option to check one of 5-6 boxes (coding points (0,1…5). Put these coding points of each of the items into the form below.
The composite scores for each of the four dimensions (sub-scales) is based on adding up the scores of the items of the respective dimensions. The composite score (total score) is the sum of the four dimension scores. The four dimensions, i.e. psycho-somatic QoL, sexual activity, sexual dysfunction – self-view, and sexual dysfunction –partner-view, and their corresponding question numbers are detailed in the form.

This form explains how the total sum-score and the sum-scores of the subscales are determined: Add up the points from each of items belonging to one of the subscales (indicated by an arrow into a blank field) to get the sum-score for the respective subscale.
The "total score" is the sum of the sum-scores of the three subscales.

	4 Subscales			
	Psycho-somatic QoL	Sexual activity	Sexual dysfunction-self-view	Sexual dysfunction-partner'-view
1. Well-being declined	….			
2. Pain in chest	….			
3. Heart discomfort at rest	….			
4. Joint and muscular ache	….			
5. Episodes of sweating	….			
6. Feeling dizzy	….			
7. Sleep problems	….			
8. Irritability and nervousness	….			
9. Depressive mood	….			
10.Physical exhaustion	….			
11.Memory, concentration impaired	….			
12.Muscular strength decreased	….			
13.Problems with urination	….			
14. Unhappy with sexual life			….	
15.Partner' unhappy with sex				….
16. Problems during sex			….	
17.Partner' problems during sex				….
18.More sexual contacts desired			….	
19.Partner desires more sex				….
20.Partner wishes less sex			….	
21.Desire for sexual activity decreased		….		
22.Desire for sexual activity increased			….	
23.More sexual dreams, fantasies			….	
24.Partner' sexual dreams				….
25.Sexual self-satisfaction			….	
26.Refuse sexual intercourse				….
27.Sex organs respond to desires		….		
28.Sexual initiative		….		
29.Great sexual excitement		….		
30.Satisfaction with sexual excitement		….		
31.Sufficient moisture during sex		….		
32.Sexual satisfaction achieved		….		

M.I.N.I.

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

English Version 5.0.0

DSM-IV

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DISCLAIMER

Our aim is to assist in the assessment and tracking of patients with greater efficiency and accuracy. Before action is taken on any data collected and processed by this program, it should be reviewed and interpreted by a licensed clinician.

This program is not designed or intended to be used in the place of a full medical and psychiatric evaluation by a qualified licensed physician – psychiatrist. It is intended only as a tool to facilitate accurate data collection and processing of symptoms elicited by trained personnel.

M.I.N.I. 5.0.0 (July 1, 2006)

GENERAL INSTRUCTIONS

The M.I.N.I. was designed as a brief structured interview for the major Axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I. to the SCID-P for DSM-III-R and the CIDI (a structured interview developed by the World Health Organization for lay interviewers for ICD-10). The results of these studies show that the M.I.N.I. has acceptably high validation and reliability scores, but can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes, median 15 minutes) than the above referenced instruments. It can be used by clinicians, after a brief training session. Lay interviewers require more extensive training.

INTERVIEW:

In order to keep the interview as brief as possible, inform the patient that you will conduct a clinical interview that is more structured than usual, with very precise questions about psychological problems which require a yes or no answer.

GENERAL FORMAT:

The M.I.N.I. is divided into **modules** identified by letters, each corresponding to a diagnostic category.

•At the beginning of each diagnostic module (except for psychotic disorders module), screening question(s) corresponding to the main criteria of the disorder are presented in a **gray box**.

•At the end of each module, diagnostic box(es) permit the clinician to indicate whether diagnostic criteria are met.

CONVENTIONS:

Sentences written in « normal font » should be read exactly as written to the patient in order to standardize the assessment of diagnostic criteria.

Sentences written in « CAPITALS » should not be read to the patient. They are instructions for the interviewer to assist in the scoring of the diagnostic algorithms.

Sentences written in « **bold** » indicate the time frame being investigated. The interviewer should read them as often as necessary. Only symptoms occurring during the time frame indicated should be considered in scoring the responses.

Answers with an arrow above them (➡) indicate that one of the criteria necessary for the diagnosis(es) is not met. In this case, the interviewer should go to the end of the module, circle « **NO** » in all the diagnostic boxes and move to the next module.

When terms are separated by a *slash (/)* the interviewer should read only those symptoms known to be present in the patient (for example, question H6).

Phrases in (parentheses) are clinical examples of the symptom. These may be read to the patient to clarify the question.

RATING INSTRUCTIONS:

All questions must be rated. The rating is done at the right of each question by circling either Yes or No. Clinical judgment by the rater should be used in coding the responses. The rater should ask for examples when necessary, to ensure accurate coding. The patient should be encouraged to ask for clarification on any question that is not absolutely clear.

The clinician should be sure that <u>each dimension</u> of the question is taken into account by the patient (for example, time frame, frequency, severity, and/or alternatives).

<u>Symptoms better accounted for by an organic cause or by the use of alcohol or drugs should not be coded positive in the M.I.N.I.</u> The M.I.N.I. Plus has questions that investigate these issues.

For any questions, suggestions, need for a training session, or information about updates of the M.I.N.I., please contact :

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A. MAJOR DEPRESSIVE EPISODE

(➡ MEANS : GO TO THE DIAGNOSTIC BOXES, CIRCLE **NO** IN ALL DIAGNOSTIC BOXES, AND MOVE TO THE NEXT MODULE)

A1	Have you been consistently depressed or down, most of the day, nearly every day, for the past two weeks?	NO	YES
A2	In the past two weeks, have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?	NO	YES
	➡ IS **A1** OR **A2** CODED **YES?**	NO	YES

A3 **Over the past two weeks, when you felt depressed or uninterested:**

a	Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally (i.e., by ±5% of body weight or ±8 lbs. or ±3.5 kgs., for a 160 lb./70 kg. person in a month)? IF **YES** TO EITHER, CODE **YES**.	NO	YES *
b	Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES
c	Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?	NO	YES *
d	Did you feel tired or without energy almost every day?	NO	YES
e	Did you feel worthless or guilty almost every day?	NO	YES
f	Did you have difficulty concentrating or making decisions almost every day?	NO	YES
g	Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?	NO	YES

ARE **5** OR MORE ANSWERS (**A1-A3**) CODED **YES**?

NO **YES ***

MAJOR DEPRESSIVE EPISODE, CURRENT

IF PATIENT HAS CURRENT MAJOR DEPRESSIVE EPISODE CONTINUE TO A4, OTHERWISE MOVE TO MODULE B:

A4	a	During your lifetime, did you have other episodes of two weeks or more when you felt depressed or uninterested in most things, and had most of the problems we just talked about?	NO	YES
	b	In between 2 episodes of depression, did you ever have an interval of at least 2 months, without any depression and any loss of interest?		

NO **YES**

MAJOR DEPRESSIVE EPISODE, RECURRENT

* If patient has Major Depressive Episode, Current, use this information in coding the corresponding questions on page 5 (A6d, A6e).

B. DYSTHYMIA

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE NO, AND MOVE TO THE NEXT MODULE)

IF PATIENT'S SYMPTOMS CURRENTLY MEET CRITERIA FOR MAJOR DEPRESSIVE EPISODE, DO NOT EXPLORE THIS MODULE.

B1		Have you felt sad, low or depressed most of the time for the last two years?	➡ NO	YES
B2		Was this period interrupted by your feeling OK for two months or more?	NO	➡ YES
B3		**During this period of feeling depressed most of the time:**		
	a	Did your appetite change significantly?	NO	YES
	b	Did you have trouble sleeping or sleep excessively?	NO	YES
	c	Did you feel tired or without energy?	NO	YES
	d	Did you lose your self-confidence?	NO	YES
	e	Did you have trouble concentrating or making decisions?	NO	YES
	f	Did you feel hopeless?	NO	YES
		ARE **2** OR MORE **B3** ANSWERS CODED **YES**?	➡ NO	YES
B4		Did the symptoms of depression cause you significant distress or impair your ability to function at work, socially, or in some other important way?		

NO	YES
DYSTHYMIA **CURRENT**	

O. GENERALIZED ANXIETY DISORDER

(➡ MEANS : GO TO THE DIAGNOSTIC BOX, CIRCLE **NO**, AND MOVE TO THE NEXT MODULE)

O1	a	Have you worried excessively or been anxious about several things over the past 6 months?	➡ NO	YES
	b	Are these worries present most days?	➡ NO	YES
		IS THE PATIENT'S ANXIETY RESTRICTED EXCLUSIVELY TO, OR BETTER EXPLAINED BY, ANY DISORDER PRIOR TO THIS POINT?	NO	➡ YES
O2		Do you find it difficult to control the worries or do they interfere with your ability to focus on what you are doing?	➡ NO	YES
O3		FOR THE FOLLOWING, CODE **NO** IF THE SYMPTOMS ARE CONFINED TO FEATURES OF ANY DISORDER EXPLORED PRIOR TO THIS POINT**.**		
		When you were anxious over the past 6 months, did you, most of the time:		
	a	Feel restless, keyed up or on edge?	NO	YES
	b	Feel tense?	NO	YES
	c	Feel tired, weak or exhausted easily?	NO	YES
	d	Have difficulty concentrating or find your mind going blank?	NO	YES
	e	Feel irritable?	NO	YES
	f	Have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	NO	YES

ARE **3** OR MORE **O3** ANSWERS CODED **YES**?

NO **YES**

GENERALIZED ANXIETY DISORDER
CURRENT

சுய ஒப்புதல் படிவம்

ஆய்வின் பெயர் சர்க்கரை நோயாளிகளின் (வகை 2) மன அழுத்தம் , மனபதற்றம் மற்றும் தாம்பத்ய குறைபாடுகள் பற்றிய ஒப்பீடு ஆய்வு

ஆராய்ச்சி நிலையம் : சர்க்கரை நோய் புறநோயாளிகள் பிரிவு ,
அரசு ஸ்டான்லி மருத்துவமனை,

சென்னை -600 001

பங்கு பெறுபவரின் பெயர் :

பங்கு பெறுபவரின் எண் :

நோயாளி இதனை (√) குறிக்கவும்.

மேலே குறிப்பிடப்பட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. என்னுடைய சந்தேகங்களை கேட்கவும் அதற்கான தகுந்த விளக்கங்களைப் பெறவும் வாய்ப்பளிக்கப்பட்டது. ☐

நான் இந்த ஆய்வில் தன்னிச்சையாகத்தான் பங்கேற்கிறேன். எந்த காரணத்தினாலும் எந்த கட்டத்திலும் எந்த சட்ட ச்சிக்கலுக்கும் உட்படாமல் நான் இந்த ஆய்வில் இருந்து விலகிக் கொள்ளலாம் என்று அறிந்துகொள்கிறேன். ☐

இந்த ஆய்வு சம்பந்தமாகவும், இதைச் சார்ந்த மேலும் ஆய்வு மேற்கொள்ளும் போதும், இந்த ஆய்வில் பங்குபெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளைப் பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன். ☐

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்களையும், பரிசோதனை முடிவுகளையும், மற்றும் சிகிச்சை தொடர்பான தகவல்களையும், மருத்துவர் மேற்கொள்ளும் ஆய்வில் பயன்படுத்திக் கொள்ளவும் அதை பிரசுரிக்கவும் / பதிப்பிக்கவும் என் முழு மனதுடன் சம்மதிக்கிறேன். ☐

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக்கொள்கிறேன். எனக்கு கொடுக்கப்படும் அறிவுரைகளின்படி நடந்து கொள்வதுடன் இந்த ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்றும் உறுதி அளிக்கிறேன். ☐

பங்கேற்பவரின் / உறவினரின் கையொப்பம் ..... இடம்
.....தேதி .....

கட்டை விரல் ரேகை ...

பங்கேற்பவரின் காப்பாளரின் கையொப்பம் ..... இடம்
.....தேதி .....

கட்டை விரல் ரேகை ...

பங்கேற்பவரின் பெயர மறறும விலாசம

இடம்

ஆய்வாளரின் கையொப்பம்

தேதி

ஆய்வாளரின் பெயர்

நோயாளியின் பெயர் பாலினம் ஆண பெண

வயது ஆண்டுகள் அல்லது பிறந்த தேதி

நோயாளியை தொடர்பு கொள்ளும் முகவரி

நோயாளியின் தொலைபேசி எண்

நோயாளியின் தந்தை / கணவர் / உறவினர் பெயர்

		பங்கேற்பவரின் கையொப்பம்/ பெரு விரல் பதிப்பு
1	மேலே குறிப்பிடப்பட்டுள்ள மருத்துவ ஆய்வின் தேதியிட்ட நோயாளிகளுக்கான செய்தி நான் படித்திருக்கிறேன் மற்றும் புரிந்திருக்கிறேன்/ விவரிக்கப்பட்டுள்ளேன். கேள்விகள் கேட்கவும் அனுமதி வழங்கப்பட்டுள்ளேன் என நான் உறுதி செய்கிறேன்	
2	இந்த ஆய்வில் பங்கேற்பது என் சொந்த விருப்பப்படியே என நான் அறிந்திருக்கிறேன். மேலும் என மருத்துவ சிகிச்சை கவனிப்பு அல்லது சட்டபூர்வ உரிமைகளுக்கு பாதிப்பு ஏற்படாமல் நான் எந்த நேரத்திலும் விலகிக் கொள்ளலாம் என்பதை அறிந்திருக்கிறேன்	
3	எத்திக்ஸ் கம்மிட்டி மற்றும் ரெகுலேட்டரி அத்தாரிட்டிஸ் கும் நான் இந்த ஆய்விலிருந்து விலகினாலும் தற்போதைய மற்றும் எதிர்கால இந்த ஆய்வு சார்ந்த என் உடல்நல குறிப்புகளை என் அனுமதியின்றி பார்க்க முடியும் என நான் அறிகிறேன். நான் ஆய்வில் இருந்து விலகிக் கொண்டாலும் இது பொருந்தும் என அறிகிறேன்.	

4	இந்த ஆய்வின் மூலம் கிடைக்கப்பெறும் குறிப்புகளையும் தகவல்களையும் மறறும் பரிசோதனை முடிவுகளையும், உபயோகப்படுத்த தடை செய்ய மாட்டேன் என சம்மதிக்கிறேன். அதனால் அவைகள் விஞ்ஞானம், ஆராய்ச்சிக் கட்டுரைகள் போன்ற சம்மந்தப்பட்டவைகளுக்கு பயன் உள்ளதாக இருக்க வேண்டும். இக்குறிப்புகள், அதன் விளக்கங்கள், ஆய்வுக் கட்டுரைகள் ஆகியவற்றை பிரசுரிக்கவும் / பதிப்பிக்கவும் என் முழு மனதுடன சம்மதிக்கிறேன்.	
5	மேற்கூறிய ஆய்வில் என் சுய விருப்பத்தின்படி பங்கு கொள்ள நான் சம்மதிக்கிறேன்.	

ஆய்வில் பங்கேற்பவர் / சட்டபூர்வமாக

ஏற்கப்பட்ட நபர் கையொப்பம் அல்லது

பெரு விரல் பதிவு

CASES

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	A
S.NO	AGE31	36-4(	41-4(	46-50	SEX	EDU	REL	FAI	SES	IMC	MAF	OCCL	RESI	OMSE	DURA	GLY.C	COMI	BDI	HAM	MEMO	PARTI	CON	HOWLON	ROLE	P S QOL	SEX	SELF VIE	PARTNI	QSF-TOTAL	
1	0	1	0	0	1	5	1	1	2	3	1	6	1	35	5	1	0	0	1	0	1	1	1	2	1	0	1	1	0	
2	0	0	1	0	1	5	1	1	2	3	1	5	1	37	7	2	0	1	1	0	1	1	1	2	1	2	2	3	1	
3	1	0	0	0	2	3	1	1	1	1	1	3	2	31	4	1	0	3	2	0	1	0	2	2	2	3	2	3	2	
4	0	0	1	0	1	5	1	1	2	3	1	4	1	32	10	3	0	3	1	0	1	0	1	1	3	3	3	3	2	
5	0	0	0	1	2	1	1	2	1	1	1	1	2	38	10	2	0	3	0	1	1	1	1	1	3	3	3	2	1	
6	0	1	0	0	2	1	1	1	1	1	1	3	2	31	6	1	0	0	0	0	1	0	1	1	3	3	3	3	3	
7	0	0	0	1	1	6	1	1	2	3	1	6	2	47	3	1	0	0	3	0	1	1	1	2	1	1	1	1	0	
8	0	0	0	1	1	2	1	1	1	1	1	4	2	38	10	2	0	0	0	0	1	1	1	1	1	1	1	2	0	
9	0	0	1	0	2	2	1	1	1	1	1	1	1	27	14	2	0	3	1	0	1	0	1	1	3	3	3	3	3	
10	0	0	0	1	1	4	1	1	2	2	1	5	2	44	5	3	0	0	0	0	1	1	1	2	3	3	3	3	3	
11	0	1	0	0	2	2	2	2	1	1	1	1	2	35	5	2	0	1	0	0	1	0	1	2	0	3	3	3	2	
12	0	0	1	0	1	2	1	1	1	1	1	4	1	36	8	2	0	0	0	0	1	1	1	1	2	2	3	2	1	
13	0	0	0	0	1	2	3	2	1	1	1	1	2	45	4	2	0	1	1	1	1	1	1	1	3	3	1	2	1	
14	0	1	0	0	2	3	2	1	1	1	1	1	1	36	3	2	0	1	1	0	1	0	1	1	3	3	3	3	3	
15	0	0	1	0	2	2	1	2	1	1	1	1	2	35	7	2	0	1	1	0	1	1	1	1	0	3	2	2	1	
16	0	0	0	1	1	3	2	1	1	1	1	5	1	42	4	3	0	3	0	0	1	1	1	2	3	3	3	3	2	
17	0	0	0	1	1	3	3	2	1	1	1	5	1	39	10	2	0	0	0	0	1	0	1	1	3	3	3	3	3	
18	1	0	0	0	2	4	2	1	1	1	1	2	1	28	6	1	0	1	0	0	1	1	1	2	2	3	2	2	1	
19	1	0	0	0	1	3	1	1	1	1	1	4	1	30	5	2	0	0	2	0	1	1	2	2	2	2	1	1	0	
20	1	0	0	0	2	3	2	1	1	1	1	3	1	29	6	2	0	1	1	0	1	1	2	1	2	3	2	3	1	
21	0	1	0	0	1	3	1	1	1	1	1	5	1	36	4	1	0	0	0	0	1	1	1	2	1	1	1	1	0	
22	0	1	0	0	1	4	2	2	2	2	1	5	2	32	6	1	0	2	2	0	1	1	1	1	1	3	2	3	1	
23	0	1	0	0	2	3	3	2	1	1	1	1	1	30	8	2	0	0	1	0	1	1	1	1	3	3	2	3	1	
24	0	0	0	1	1	2	1	2	2	2	1	5	1	38	10	2	0	1	0	0	1	0	1	2	0	3	2	2	1	
25	0	0	1	0	1	3	1	1	1	1	1	3	1	30	8	1	0	0	0	0	1	1	2	2	2	1	1	2	0	
26	1	0	0	0	1	4	1	1	2	2	1	5	1	28	6	1	0	0	0	0	1	1	3	2	0	0	0	0	0	
27	1	0	0	0	1	3	1	1	1	1	1	5	1	31	4	2	0	0	1	0	1	1	2	2	1	1	1	1	0	
28	0	0	1	0	1	2	1	2	1	1	1	3	1	38	6	2	0	1	2	0	1	0	1	1	2	2	2	3	1	
29	0	0	1	0	2	3	2	1	2	2	1	2	1	36	6	1	0	0	1	0	1	0	1	1	2	2	2	3	1	
30	0	0	0	1	1	3	1	1	1	1	1	1	1	39	9	2	0	0	0	0	1	1	1	1	3	3	3	3	2	
31	0	0	0	1	1	2	1	1	1	1	1	5	2	36	12	2	0	1	0	0	1	0	1	1	0	3	2	2	1	
32	1	0	0	0	2	4	1	1	2	2	1	1	1	30	4	1	0	0	1	0	1	1	2	2	1	1	0	0	0	
33	1	0	0	0	1	4	1	1	2	2	1	5	1	28	6	1	0	1	0	0	1	1	2	2	1	1	0	1	0	
34	0	1	0	0	2	4	2	1	1	1	1	3	2	31	8	2	0	1	1	0	1	1	1	2	2	2	1	1	0	
35	0	0	0	1	2	3	3	2	2	2	1	3	1	36	13	2	0	0	1	1	1	0	1	1	3	3	3	3	2	
36	0	1	0	0	1	5	1	1	2	2	1	5	1	32	6	1	0	1	0	0	1	1	2	1	2	3	2	2	1	
37	1	0	0	0	1	5	1	1	2	2	1	5	1	29	4	1	0	1	0	0	1	1	2	2	1	0	0	0	0	
38	0	0	1	0	1	3	1	1	2	2	1	5	2	36	8	2	0	1	1	0	1	0	1	1	3	3	3	3	3	
39	0	1	0	0	2	3	1	1	1	1	1	3	2	31	7	1	0	2	1	0	1	1	1	2	2	3	3	2	2	
40	0	0	1	0	1	4	1	1	1	1	1	4	1	38	6	2	0	1	0	0	1	1	1	1	2	2	3	3	1	

CONTROLS

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
S.NO	AGE	36-40	41-45	46-5	SEX	EDU	REL	FAM	SES	INC	MARIT	OCC	RES	ONSE	DUR	GLY.C	COMPI	BDI	HAM	MEMO	PARTN	CONT	SEXUAL	ROLE (	PS	SEX	SELF	SEXU/	QSF-TOTAL	
1	0	1	0	0	1	5	1	1	2	3	1	6	1	0	0	0	0	3	3	0	1	1	2	2	0	2	2	2	0	
2	1	0	0	0	1	5	1	1	2	3	1	6	1	0	0	0	0	0	0	0	1	1	3	2	0	0	0	0	0	
3	0	1	0	0	1	6	1	1	3	3	1	6	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	3	3	0	
4	0	1	0	0	2	6	2	1	3	3	1	6	1	0	0	0	0	0	0	0	1	2	1	2	0	1	1	1	0	0	
5	0	1	0	0	2	6	1	1	3	3	1	7	1	0	0	0	0	2	0	0	1	1	1	1	3	2	3	3	3	2	
6	0	1	0	0	2	1	1	1	1	1	1	3	2	0	0	0	0	0	1	0	1	1	1	1	2	3	3	3	3	3	
7	0	0	0	1	2	1	1	2	1	1	1	1	2	0	0	0	0	2	2	1	1	2	1	1	3	2	2	3	3	2	
8	0	0	1	0	2	1	1	1	1	1	1	4	2	0	0	0	0	0	0	0	1	2	1	1	2	1	2	3	3	1	
9	0	0	1	0	2	1	2	2	1	1	1	3	2	0	0	0	0	3	2	0	1	1	1	1	2	3	3	3	3	2	
10	1	0	0	0	2	2	1	1	2	2	1	1	1	0	0	0	0	1	2	0	1	1	1	2	1	3	1	1	3	3	
11	1	0	0	0	2	3	1	1	2	2	1	3	2	0	0	0	0	0	0	0	1	1	1	1	1	2	3	2	2	1	
12	1	0	0	0	2	3	1	1	1	1	1	1	2	0	0	0	0	0	0	0	1	1	2	1	0	0	0	0	0	0	
13	0	1	0	0	2	5	1	1	2	2	1	6	2	0	0	0	0	1	0	0	1	1	2	1	0	0	0	0	0	0	
14	0	0	0	1	1	3	3	2	1	1	1	5	1	0	0	0	0	0	0	0	1	0	1	1	3	3	2	3	3	2	
15	0	0	1	0	1	3	2	2	1	1	1	4	2	0	0	0	0	0	0	0	1	1	1	1	0	1	1	2	2	0	
16	0	0	1	0	1	1	1	1	1	1	1	3	1	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2	0	
17	0	0	1	0	1	3	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	1	2	1	1	0	0	0	0	
18	0	0	0	1	1	4	1	1	1	1	1	3	1	0	0	0	0	0	0	0	1	1	1	1	1	1	2	1	1	1	
19	0	1	0	0	1	3	1	2	1	1	1	5	2	0	0	0	0	0	1	0	1	1	1	2	0	0	0	0	0	0	
20	0	0	0	0	1	4	1	1	1	1	1	4	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	
21	0	0	0	0	1	2	5	1	1	2	2	1	1	0	0	0	0	0	0	1	1	0	1	1	2	3	2	3	2	2	
22	0	0	0	0	1	1	2	2	1	1	1	3	2	0	0	0	0	0	1	0	1	1	1	1	1	1	1	2	2	0	
23	0	0	0	0	1	1	3	3	2	1	1	3	1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	2	2	0	
24	0	0	1	0	1	3	1	1	1	1	1	3	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	
25	1	0	0	0	1	4	1	1	1	2	2	5	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0	0	
26	1	0	0	0	1	3	1	1	1	1	1	5	1	0	0	0	0	0	0	0	1	1	2	2	1	0	0	0	0	0	
27	0	0	0	1	1	2	2	2	1	2	2	5	1	0	0	0	0	0	0	0	1	1	1	1	3	1	1	0	0	0	
28	1	0	0	0	1	4	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0	0	
29	0	0	1	0	1	2	1	2	1	1	1	3	1	0	0	0	0	1	0	0	1	1	1	1	0	1	0	0	0	0	
30	1	0	0	0	2	4	1	1	2	2	1	1	1	0	0	0	0	1	1	0	1	1	1	1	1	1	1	2	2	0	
31	0	0	0	1	1	2	1	1	1	1	1	5	2	0	0	0	0	0	0	0	1	0	1	1	2	2	2	3	3	1	
32	0	0	1	0	2	3	2	1	2	2	1	2	1	0	0	0	0	0	0	0	1	1	1	1	0	1	1	2	2	0	
33	0	0	0	1	1	3	1	1	1	1	1	4	1	0	0	0	0	0	0	0	1	1	1	1	2	2	1	1	1	0	
34	0	1	0	0	1	5	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	1	2	1	0	0	0	0	0	
35	0	1	0	0	2	4	2	1	1	1	1	3	2	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	
36	0	0	0	1	2	3	3	2	2	2	1	3	1	0	0	0	0	0	0	1	1	0	1	1	3	3	2	3	2	0	
37	1	0	0	0	1	5	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0	0	
38	0	1	0	0	2	3	1	1	1	1	1	3	2	0	0	0	0	0	0	0	1	1	1	2	0	0	0	0	0	0	
39	0	0	1	0	1	3	1	1	2	2	1	5	2	0	0	0	0	0	0	0	1	1	1	1	2	1	0	1	1	0	
40	0	0	1	0	1	4	1	1	1	1	1	4	1	0	0	0	0	0	0	0	1	1	1	2	0	1	1	1	1	0	

41	0	0	0	1	1	3	3	2	1	1	1	5	1	0	0	0	0	1	0	0	1	0	1	1	0	1	0	0	0
42	1	0	0	0	1	4	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0
43	0	0	0	1	2	5	1	1	2	2	1	1	1	0	0	0	0	0	0	1	1	0	1	1	2	3	2	3	2
44	0	0	1	0	1	4	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	1	1	2	1	0	0	0
45	0	1	0	0	1	3	1	1	1	1	1	4	1	0	0	0	0	0	0	0	1	1	1	2	0	0	0	0	0
46	0	1	0	0	1	5	1	1	2	2	1	5	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0
47	1	0	0	0	2	4	3	2	1	1	1	3	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0
48	0	0	0	1	1	3	1	2	1	1	1	1	1	0	0	0	0	1	0	0	1	1	1	1	3	3	2	2	1
49	0	0	0	1	1	1	1	1	1	1	1	4	2	0	0	0	0	0	1	0	1	0	1	1	3	3	2	3	2
50	0	1	0	0	2	1	1	1	1	1	1	2	2	0	0	0	0	2	1	0	1	0	1	1	2	3	2	3	2
51	0	1	0	0	1	4	1	1	2	2	1	4	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0
52	0	0	1	0	1	3	1	1	1	1	1	5	1	0	0	0	0	0	0	0	1	1	1	2	0	1	0	0	0
53	1	0	0	0	2	4	3	1	2	2	1	4	1	0	0	0	0	0	0	0	1	1	2	2	0	0	0	0	0
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80	0	0	1	0	1	4	1	1	2	2	1	5	2	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0

INSTITUTIONAL ETHICAL COMMITTEE, STANLEY MEDICAL COLLEGE, CHENNAI-1

Title of the Work : A Comparative analysis of depression anxiety and quality of sexual function in type 2 diabetes mellitus patients in a tertiary care Hospital.

Principal Investigator : Dr. N S Kumar

Designation : PG in MD (Psychiatry)

Department : Department of Psychiatry
Government Stanley Medical College,
Chennai-01

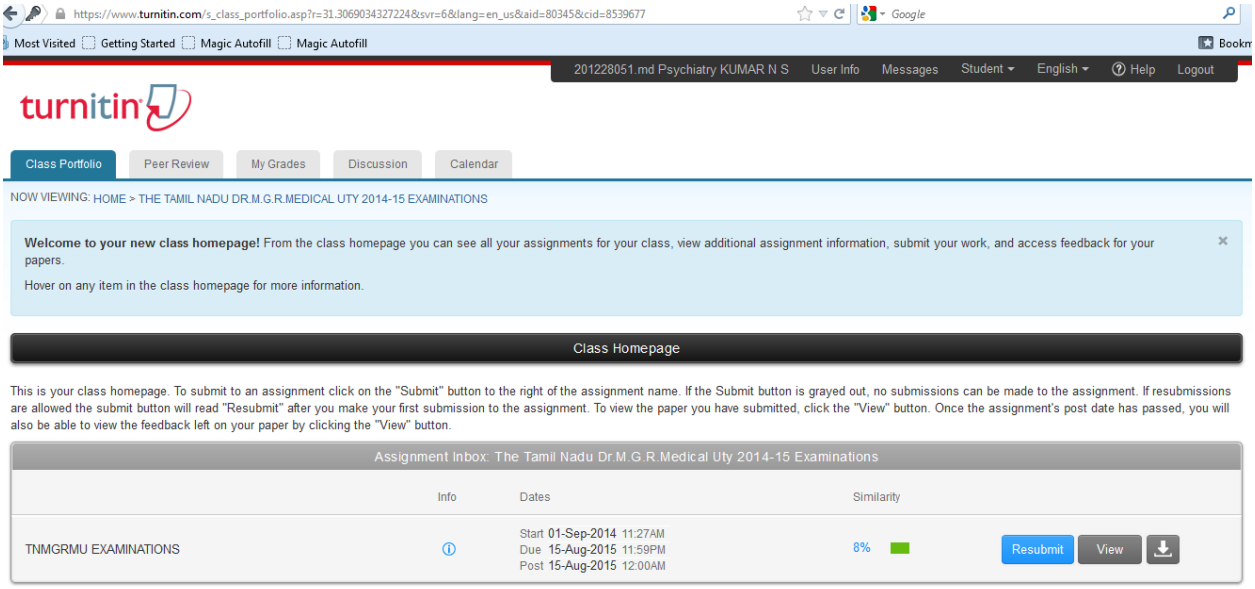
The request for an approval from the Institutional Ethical Committee (IEC) was considered on the IEC meeting held on 02.07.2014 at the Council Hall, Stanley Medical College, Chennai-1 at 2PM

The members of the Committee, the secretary and the Chairman are pleased to approve the proposed work mentioned above, submitted by the principal investigator.

The Principal investigator and their team are directed to adhere to the guidelines given below:

1. You should inform the IEC in case of changes in study procedure, site investigator investigation or guide or any other changes.
2. You should not deviate from the area of the work for which you applied for ethical clearance.
3. You should inform the IEC immediately, in case of any adverse events or serious adverse reaction.
4. You should abide to the rules and regulation of the institution(s).
5. You should complete the work within the specified period and if any extension of time is required, you should apply for permission again and do the work.
6. You should submit the summary of the work to the ethical committee on completion of the work.

MEMBER SECRETARY,
IEC, SMC, CHENNAI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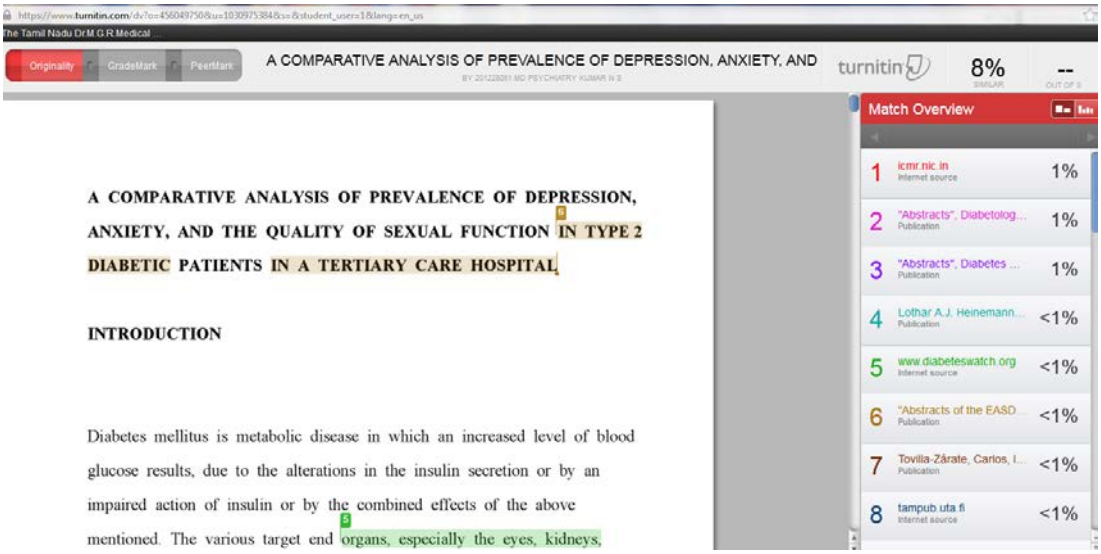
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A COMPARATIVE ANALYSIS OF PREVALENCE OF DEPRESSION, ANXIETY, AND THE QUALITY OF SEXUAL FUNCTION IN TYPE 2 DIABETIC PATIENTS IN A TERTIARY CARE HOSPITAL
INTRODUCTION
Diabetes mellitus is metabolic disease in which an increased level of blood glucose results, due to the alterations in the insulin secretion or by an impaired action of insulin or by the combined effects of the above mentioned. The various target end organs, especially the eyes, kidneys,